

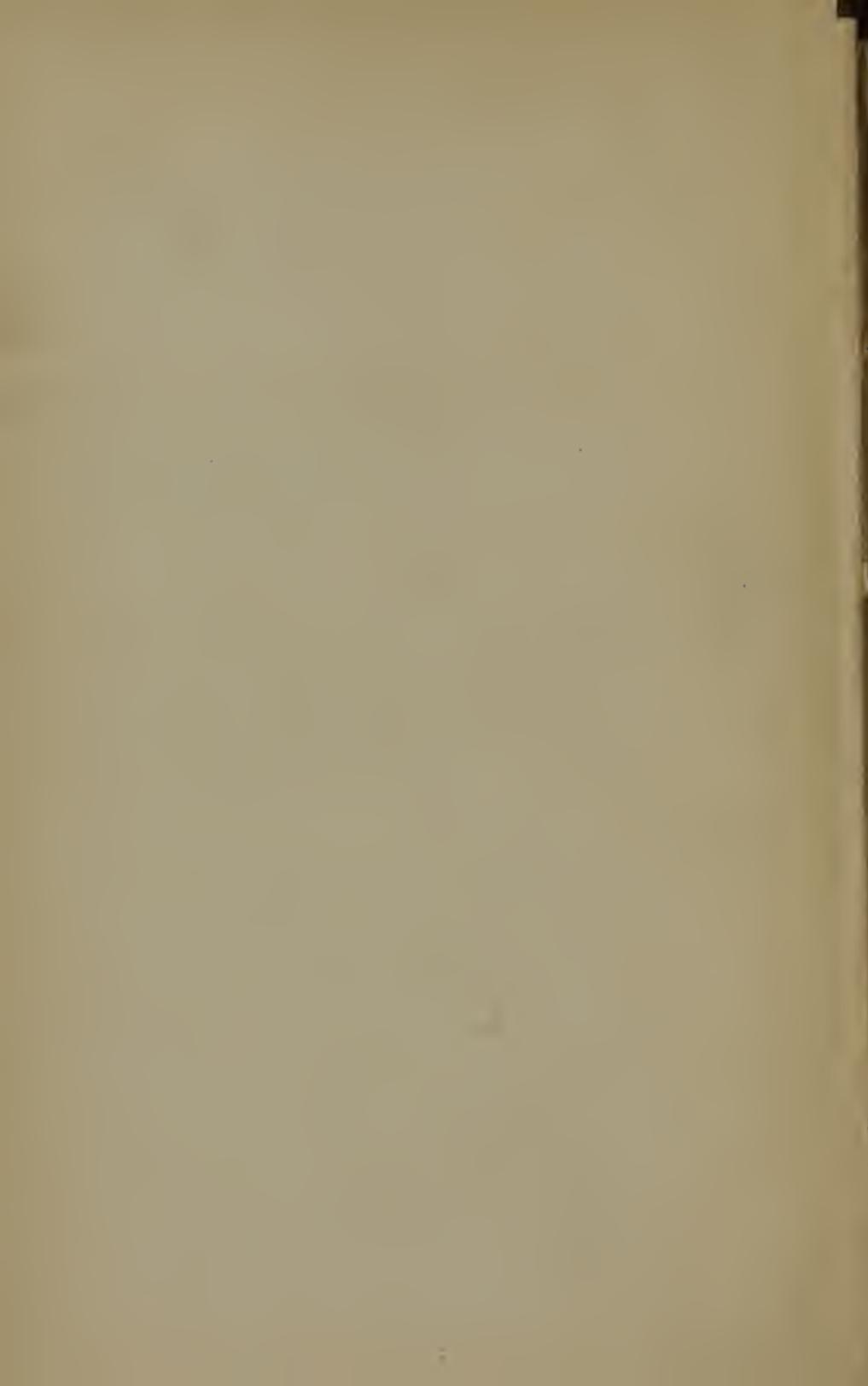
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LECTURES ON FEVER,

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BY

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LECTURES ON FEVER.

LECTURE I.

FEVER.

WE are now to enter upon the consideration of one of the most difficult subjects of our profession—fever. It is difficult, not because much cannot be said and written upon it, but because, rather, of the much which has already been said and written, to such little purpose. The subject is difficult, too, because of the discrepancy in the views and opinions of authors, the number of discordant and contradictory hypotheses which have been put forth, and the little that can be relied upon in all of them which is incontrovertibly true. This, the most common of all the diseases which afflict mankind, has engaged the attention of numerous able and distinguished writers, from the time of Hippocrates to the present, and yet it must be acknowledged, that there are few material points, in reference either to its etiology or pathology, which can now be considered as settled and

determined beyond further controversy. And this remark is scarcely less applicable to the subject of treatment. Physicians have always differed in regard to this, and they continue to differ. Even in the same district of country, and in the same town, however small, various and conflicting methods of cure are followed and relied upon, although there is great uniformity in the character of the prevailing fever. Indeed, this uniformity in the pathology of the disease seems to be almost the only uniformity which we meet with in regard to the whole subject, and even this is observed without being understood. Yet the laws of nature in this regard, as in other matters, are, without doubt, invariable and unchangeable. Could we but learn and comprehend the great mass of valuable and immutable truth, in connection with this common disease, it would lead to more successful treatment, and be of great and important service to suffering humanity, producing, indeed, an increase in the average duration of human life.

For the want of this certain knowledge, it becomes difficult for the student of medicine to arrive at just conclusions, in reference not only to the true theory, but the proper treatment of fever. And it is scarcely less difficult for the teacher, in the mass of discordant materials by which he is surrounded, to select and arrange those portions only which are best suited to the elucidation and proper understanding of the sub-

ject, and so to prepare a series of consistent and intelligible lectures, which can be listened to with interest and made useful in practice. In the present effort, a free use will be made of the observations and teachings of others, without adhering to the views of any one author, while the class will receive, as it has a right to expect, such results of my own long experience in the treatment of southern fevers as may promise to be useful.

Fever is probably the only diseased condition which invariably implicates the entire system. Whenever and under whatever circumstances it may happen to exist, it exercises, in all cases, a palpable influence over the whole body—over the solids and the fluids, the muscular fibres, membranes, digestive organs, brain, and the vascular, nervous, and glandular systems. Wherever the blood circulates, or the nerves are distributed, there are signs of the diseased condition, as there are also, we have reason to believe, in all the vital fluids of the body. In general, fever is accompanied by an increase of animal heat, but not always, and quite as commonly, the inceptive stage is that of chill, but even this is not a uniform concomitant.

Of the cause of fever, it is quite safe to say we know nothing; and I need not trouble you, therefore, with an account of the various hypotheses on that subject. In regard to exterior influences, no one cause has been suggested, so far as I am aware, which

may not exist, under some circumstances, without producing fever in those exposed to its influence ; and probably the converse of this proposition is equally true—fever may occur without our being able to assign it to any cause which has ever been suggested. Crowded apartments, want of ventilation and cleanliness, unwholesome food, chemical decomposition, exposure to inclement weather, etc., are all reputed causes, which not only are found existing in many places without producing fever, but which have sometimes appeared to afford protection against fever, while the most fatal forms of fever have often prevailed as epidemics where none of the commonly alleged causes could be discovered.

It has been contended that fever is always dependent upon some local inflammation or irritation, as a necessary condition precedent and real cause, and that it never exists as a primary form of disease ; in other words, that fever is always symptomatic of some other morbid affection. But this view does not appear to be sustained, either by observation or by *post-mortem* appearances ; for fever is often known to exist without any previous signs of local disease ; and autopsic proofs of inflammation appear in cases which have shown no signs of general febrile action. If a considerable degree of local inflammation may exist, therefore, without any signs of general fever, and if a considerable amount of general fever may exist, with-

out signs of local inflammation, we may safely infer that there is no necessary connection between the two, and that either one may exist without causing or being caused by the other.

The humoral pathology, with certain variations and modifications, was the popular hypothesis for many ages, from the era of Hippocrates. The prevalent notion was, that febrile heat was, in some way, owing to changes taking place in the constituents of the blood, the bile, and the phlegm; and as medical men had then no knowledge of the circulation, these fluids were strangely confounded and blended together. The doctrine of fermentation and putrescence was the natural result of this exclusive reference to the fluids; and when the circulation of the blood was afterward discovered, it required no great stretch of the imagination to conceive that the main effort of nature in fever was, by the movement of this fluid through the arteries and veins, to expel certain morbid humors from the body. Chemical combinations were also supposed to be taking place in all the fluids; and Boerhaave supposed that the blood became so thickened in fever, that it could not circulate freely in the capillary vessels, and that this was the cause of the cold stage and the subsequent reaction, in some way not explained.

Fever was, for a long time, considered not so much a disease, as an effort of nature to rid the system of

some morbid product—some diseased quality or admixture of the blood—the existence of which could not, of course, be proved. The humoral pathology, therefore, was a mere hypothesis, founded wholly upon an assumption of facts, and if there was some truth in it, as is now contended by many, it was wholly accidental. In the then state of physiological and chemical knowledge, and without the means of analyzing the blood and other fluids of the body, there was no possibility of constructing a reliable or even an intelligible theory of fever, upon any scheme of humoralism; nor have modern investigations afforded us much assistance in this respect, in the establishment of undoubted facts. But the hypothesis has had an influence, both in ancient and modern times, in favor of a negative or expectant treatment of fever, relying mainly upon the powers of nature to effect a cure.

It is remarkable, that among all the able men who wrote upon fever, the solids of the body should not have been mentioned as having any agency in its phenomena, until the hypothesis of disordered innervation was called into view by Stahl and Hoffman, who substituted a spasm of the capillary vessels for the thickened blood and the *error loci* of Boerhaave; and this idea seems to have been seized upon by Cullen, without considering that there was no more proof of the existence of spasm than of a diseased

condition of the blood; but it was even more common then than now, to construct hypotheses upon assumed data. Cullen taught, that the first effect produced upon the system by the cause of fever is, to establish a diminution of cerebral and nervous energy, constituting an early stage of collapse, or depression below the standard of health. It was supposed, and this without any good reason, that this condition of nervous debility caused the spasm of the capillary vessels, and a consequent reduction of their calibres. The subsequent réaction, it was contended, relieved this condition of spasm and constriction, causing relaxation and sweating, and also the excretion of morbid matter; for this idea was adhered to by authors on fever long after the humoral pathology was discarded, if not even to the present time.

Cullen evidently deemed it incumbent on him as a prominent teacher in medicine, to concoct and promulgate a theory, or rather hypothesis, of fever, as so many others had done before him, and, like them, not having the facts or the knowledge of facts necessary for the purpose, he did not hesitate to follow their examples, and supply the deficiency by copious drafts upon a fertile imagination. It is of little consequence, perhaps, that he taught the doctrine of spasm; but that of debility, connected therewith, has been productive of much mischief. He committed the strange mistake of confounding the temporary

nervous depression which precedes the febrile exacerbation, with actual constitutional debility, and thus inaugurated a system of excitant treatment, which has been and even now is very destructive of human life. The gastric disturbance which commonly attends upon fever he, quite as strangely, considered as evidence of an "atony subsisting in the extreme vessels of the body;" and this assumed existence of atony, connected with a state of tonic spasm in the same tissues, lent further support to the excitant treatment. And this is just the way in which the most absurd medical hypotheses have been formed by men of learning, whose influence has been sufficient to carry the whole medical profession in their train, spreading evil and mischief broadcast over the world.

Brown next appeared, promulgating, in a spirit of rivalry, an hypothesis even more extraordinary still. This was somewhat more ingenious and intelligible, perhaps, but not more true and enduring than the preceding one. While it differed so essentially from that of Cullen in all other respects, it unfortunately contributed to sustain the fatal doctrine of debility and the excitant treatment of fever. This hypothesis, so captivating, and, for a while, so popular, was founded upon the supposed relations existing between excitability and excitement. It proposed to consolidate all disease into two simple classes, sthenic and asthenic, to be treated respectively by depletion and

stimulation. He succeeded, for a time, in winning over from Cullen many of his disciples, while he unwittingly propagated his very worst error—that of constitutional debility, which has slain its thousands.

Darwin, with more genius and imagination than either Cullen or Brown, attempted an important improvement upon the brunonian hypothesis. Considering the brain to be the chief source of sensorial power—a mere secretion of that organ—he taught that it might be exhausted of its energy by various modes of excitation, and as certainly replenished by nutrition and rest. The old idea of a torpor of the capillary vessels was inculcated by him, which torpor was supposed to lead to an accumulation of sensorial power, and consequent reæction.

Neither of these popular hypotheses of fever, which has each in its turn carried captive the profession in both Europe and Ameriea, makes fever dependent in any degree upon the influence of local inflammation ; but a host of hypothetic authors have since appeared, insisting upon the truth of this doctrine, and making fever a symptomatic affection. Local lesions have been found in the brain and other organs, *post mortem*, and the fever causing death has been attributed to the agency of such lesions, although no signs of their existence may have appeared anterior to the febrile development. Stahl, Clutterbuck, and others, designated the brain as the seat

and source of all the mischief ; but Broussais and his followers professed to have discovered the error of these cerebralists, and, for no better reasons than those which guided their predecessors, placed the local cause of fever uniformly in the mucous membrane of the digestive organs. One party professes to find this cause in an overworked brain ; the other in an overworked stomach ; and both illustrate their positions by autopsic inspections.

The hypothesis of the ventralists, like that of the cerebralists, met with pretty general acceptance ; and the more, no doubt, for its being made the basis of what its author chooses to call “ the physiological system of medicine ;” but why it is more physiological to locate the cause of fever in the stomach than in the brain, we are not informed. Two reasons are urged, however, why this system should be preferred to the other. One is, that more or less traces of inflammation are to be seen, with some exceptions, in the mucous tissues of fatal cases ; and the other, that the treatment founded upon this pathology is successful. But the same reasons, substantially, have been given in support of all other systems. As in the humoral pathology, to which this appears to be a legitimate sequel, the *vis medicatrix naturæ* is still the divinity to be invoked. We are required to remove all causes of irritation from the membranous contact, and trust the rest to nature,

Louis has amended the “physiological system,” by discovering, what had strangely escaped the scrutiny of Broussais, that the local lesion is not in the mucous membrane, but in Peyer’s glands; and this he claims as the introduction of a new system, in the following remarkable language: “Observe closely these numerous crypts, these glands, which, in their normal state, are almost imperceptible, which are usually called the glands of Peyer; these infinitely minute organs, which, notwithstanding their agglomeration, have so long remained unperceived, and to which anatomists were at a loss to attribute any function, except the secretion of a little mucus; these organs are destined hereafter to play a grand *rôle*, nay, the first *rôle* in pathology. They have far greater importance pathologically than the liver, the spleen, the lungs, the encephalon itself; for I have discovered that they are the seat of all those numerous and varied diseases, so fatal to the human race, so discouraging to physicians, which occur in epidemics under so many forms, which have exercised the sagacity of the greatest geniuses from Hippocrates until now; of those diseases, lastly, which have been so improperly called primary or essential fevers. . . . Recollect that there is no such thing as inflammatory fever, or bilious, or putrid, or malignant fever: we have changed all that; remember that all these fevers are comprised in typhoid fever, inasmuch as they all

have, as their common characteristic, a profound and specific lesion of the elliptical patches."

No bolder attempt than this has ever been made to build up an original theory or hypothesis; and yet it is scarcely put forth before the discovery is made, that the lesion which is here considered so essential to the existence of fever, is not a constant concomitant. It can, indeed, only be determined to exist at all by *post-mortem* examination. A single exception, you will perceive, is fatal to the whole system; and there is now no reason to doubt that fever very often exists without either inflammation of the intestinal mucous tissues, or of the glands of Peyer. Neither can, therefore, be considered an essential cause or condition. It seems, moreover, more than probable that both these lesions, when they exist at all, are the effects of fever. These theories of the French school, therefore, which have been so confidently announced, and so trustingly received, present no stronger claims upon our confidence than those which preceded them; nor do they promise more durability. Indeed, one can hardly examine the various theories of fever, which have up to the era of Louis been promulgated, and contemplate the errors in practice which have resulted from them, without acknowledging the truth of the maxim of Cayol, one of the critics of Louis: "*Systems in medicine are idols, to which human victims are sacrificed.*"

The student of medicine is expected to inform himself in regard to the character of the prominent hypotheses which have been published ; but the natural effect upon the minds of those who are in pursuit of truth is, to impress them with the uncertainty which must ever attend upon the most able and ingenious, founded in any degree upon assumed data. It is because of this unsubstantial basis that so large a number have been promulgated upon this subject. Each has had its adherents, who were ready to subscribe to every assumption, and every dogma ; and the duration of one seems to have been limited only by the appearance of another to take its place. As each in its turn has occupied the attention, and secured the confidence of the profession, it has required considerable moral courage to question its soundness ; but you may safely consider, that what has been written in explanation of fever hitherto is merely hypothetic ; and you will do well to believe, that theories in medicine, as in other branches of science, must always be founded upon well-established facts, without which they are not entitled to confidence.

Whatever may have been said of fever as proceeding from the influence of local irritation, it is not now to be doubted that whenever it exists, it involves the whole system in its abnormal action. In general, if not always, it is a mild disease in its early stages, insomuch that it is not an easy matter, in many cases,

to determine the actual period of its beginning. In its slow and gradual progress to greater and greater intensity, it affects the system somewhat unequally, in some parts more than in others, according to the degree of susceptibility of different organs and tissues; until, finally, when the disease becomes developed, and symptoms of serious import arise, some one organ or tissue is found to be more particularly implicated than the rest, causing much suffering from the local as well as from the general disease; and it is just at this period that the advice of the physician is most likely to be required. He finds the patient suffering with fever, the attack being generally referred to that period in its progress in which a distinct chill, or other painful symptom, occurred. But if diligent inquiry be made, it will be found that the first signs of disease appeared at an earlier date, often several days, and sometimes even weeks, before the true character of the ailment was discovered.

I shall have occasion, probably, to refer to this matter again, but I mention it now to enable you to account, in some measure, for the discrepancy in the views of those who have thought themselves called upon to construct systems in medicine; and also to deprecate the fact, that this slow and insidious character of fever, in its approaches, has hitherto been too little noticed by authors. I shall attempt to show

you, too, as we go on with the course, that fever, in all its various forms and grades, is, in its inceptive stage, a mild and tractable disease, even when prevailing as a fatal epidemic.

In thus condemning the views of so many distinguished writers on fever, all of whose ingeniously constructed systems have proved to be only ephemeral, it is not my intention to propose one of my own. I have none to offer. If you ask me what I consider to be the true cause and pathology of fever, I must express to you my belief that these yet remain to be discovered; and when we consider what have been the labors and researches of the ablest men in our profession, it seems quite strange that greater discoveries have not been made. So it is, however, and we must look to the future for instruction upon these subjects, without much dependence upon the past. New means and appliances of investigation are coming constantly into use, and possibly the facilities to be afforded for chemical analysis, and for microscopic observation, together with a more thorough acquaintance with the workings of the nervous system, may ere long reveal what has hitherto been hid from human scrutiny. At the present time, we must patiently content ourselves with the rules adopted by philosophers in reference to the imponderables, known only from their effects. The time is past, I judge,

when mere hypothesis, however ingeniously constructed, can secure the support of our profession. The age in which we live seeks for truth, and acknowledges the necessity of a substantial foundation in ascertained facts, for all theories of disease.

LECTURE II.

FEVER.

FEVER is known sometimes to be symptomatic of some local affection, as when produced by a wound, or injury of some kind, causing active inflammation, and affecting the whole system by sympathy. Some have concluded, therefore, that all fever is necessarily symptomatic. Indeed, so common has been this view, that some authors have been unable to conceive how fever can otherwise exist. They are unwilling to acknowledge that fever is, or can be, an essential disease, or a disease *sui generis*; and, for some reason unexplained and unexplainable, they prefer to consider it a mere symptom of some other disease. Hence the extraordinary efforts made to discover some one lesion, as the invariable cause of fever. This, as I have already shown you, is the high ambition of certain celebrities of the French school of medicine; but they are as yet unable to agree upon the particular lesion necessary, or even to designate any one which invariably exists, either as a condition precedent or concomitant.

But, however strongly inclined to respect high au-

thority in these matters, we are forced by observation and experience to believe, that fever may, and often does, exist as a condition precedent, and that these local derangements and complications just as often follow attacks of fever as consequences. They are dependent for their locality in these cases, probably, upon epidemic influence, or upon some peculiar susceptibility of the organ or tissue affected. In winter, the action of the cold air, and sudden transitions of temperature upon the lungs, seem to predispose these organs to the disordering influences of febrile action, and we have pneumonic fever prevailing, to the almost entire exclusion of other forms. At other seasons, the brain, stomach, intestines, liver, etc., become the more susceptible and impressionable organs, and hence the more common complications—phrenitis, gastritis, enteritis, hepatitis, etc. ; and the fever, after such development occurs, must be treated with special reference to the local lesion, wherever it may appear. The local lesion once begun, and sustained by the retroactive influence of the fever, may proceed to an extent dangerous to life. Acting upon the whole system as a local irritation from any other cause, its tendency is to prolong, and in some respects to change the character of the fever to which it owed its origin. The suffering and danger resulting will depend upon the intensity of the fever, its duration, and especially upon the organ or tissue principally affected. The

difference in the intensity and danger of cases may approximate very nearly to the difference existing between such local affections appearing as primary diseases. Many of the symptoms are, indeed, the same as in local inflammations proceeding from other causes, and the indications of cure are similar.

But while contending for these local lesions as the common effects of fever, we must be careful not to ignore their existence as causes; although it is true that they rarely occur as such in this climate. Cerebritis, gastritis, enteritis, pneumonitis, etc., are rare diseases in this climate, except as local lesions of prevailing fever; but whenever they do occur from other causes, symptomatic fever may or may not attend upon them, being caused, no doubt, when it does appear, by the constitutional irritation resulting from the local disease. In such case, the local lesion is, of course, the primary, and the fever the secondary affection, standing in relation to each other as cause and effect. Now, all these things will appear to you as little more than truisms; and yet it seems to be necessary to state them, on account of the credit which is so largely given to the physiological doctrines, or the exclusive symptomatic system of modern writers. In the treatment of fever, it is of great importance to exercise a sound discrimination in regard to this matter of cause and effect, lest we may sacrifice human life by vain efforts to relieve a local affection,

without due regard to the cause producing it. As well might we attempt the cure of ophthalmia, while the grain of sand which caused it is still in the eye.

That all febrile excitement consists in morbid reaction, from a state of nervous depression, arising from some unknown cause, in idiopathic fever; and that, in all other cases, febrile action is caused by local irritation, affecting the whole system by sympathy with a particular part, will, I think, be denied by very few physicians in the South, whatever may be the opinions entertained elsewhere. And I judge from the writings of distinguished foreigners that the effects produced upon local organs and tissues by idiopathic fever here, are very much the same as in Europe. Thus we have, in winter, periodic fever, arising from some unknown cause, which, like the typhns and typhoid fevers of more northern latitudes as described by Stokes and others, almost constantly produce congestions and inflammations in the thoracic viscera; and with us, on this account, they are denominated pneumonia, pneumonic fever, etc., pneumonia in any other form being a rare disease here. So, also, in summer and autumn, for reasons not yet understood, the congestions and inflammations from the same cause appear mostly in the abdominal viscera, and our nomenclature is changed accordingly. This is said, also, to be the case in foreign countries, especially in Southern Europe. The fevers of Spain,

Italy, and the South of France, as described by medical writers, are the same as in the Southern States, even to the occasional appearance of gastric or yellow fever, sporadic or epidemic; and, of course, they are attributable to the same cause. In Great Britain and Ireland there has been some dispute as to the general existence of the periodic feature in connection with fever; but there are physicians in those islands, not a few, who acknowledge its prevalence, and who adopt the antiperiodic treatment. Especially is this true of those physicians who have resided in southern colonies, and who have thus, from their own observations, become good judges of this matter. It seems to me not improbable that a difference of opinion may arise from the fact, that the different stages of fever in those northern countries are less distinctly developed; and it may be that the febrile lesions appear at an earlier period, reacting upon the system by constitutional irritation, and thus exhibiting early signs of symptomatic fever, as an effect of this local disease. In the Northern States there is the same difference of opinion. The physicians of Philadelphia, who have given us pretty much all that is valuable in medical authorship in America, acknowledge the periodic character of their fevers, particularly those of summer and autumn; and they employ the bark and its salts scarcely less freely than we do in the South; while in New-York and Boston

the disposition, we are told, prevails, to ignore the prevalence of periodicity, although quinine is pretty freely used in the treatment of fever, but it is given as a tonic, and not as an antiperiodic remedy.

Whenever we attempt to treat fever, about the cause and character of which so little is known, we must, to be practical, confine ourselves mainly to the various phenomena which the disease presents to our observation, from its inception to its close. And nothing can be more important, in this practical point of view, than to determine accurately the relation which the constitutional disturbance bears to the local congestions and inflammations which attend upon it. In the pursuit of this inquiry for ages past, authors have constantly differed in regard to cause and effect ; some contending, as we have seen, that fever is an effect and a symptom of some local affection ; and others, that it is more commonly a primary and essential disease, and an exciting cause of local derangements. Divested of the influences of all preconceived hypotheses, this is, in every case of fever, a mere question of fact ; and we must look to facts rather than to idle and fanciful speculations, if we wish to arrive at correct conclusions. Let us therefore consider what facts teach us ; many of you have observed them already, and you may observe them in your intercourse with the sick, daily.

It often happens in this country that a person, com-

ing from a healthy region into one where periodic fever is prevailing, begins, in a few days, to feel some degree of indisposition. At first it is slight, temporary, and scarcely noticeable; but it increases from day to day until developed into a distinct chill; and the occurrence of this chill is the first convincing proof he has of the nature of his insidious malady. The chill is followed by the hot and sweating stages of the febrile paroxysm, perhaps only obscurely defined, and the subject is, to all appearance, well again. The paroxysms return, however, at the regular quotidian or tertian periods, and become more distinct and violent at each successive repetition. After a while, signs of some particular local disorder begin to appear, and this local affection, constantly increasing in violence, becomes, in due course of time, the most troublesome feature in the disease, and the principal obstacle in the way of treatment. Sometimes, indeed, if relief be long delayed, this local disease becomes an obstinate chronic affection, which continues to afflict the patient long after the fever has been arrested. Now, to contend, in such a case, that the local disease was the primary, and the fever a secondary affection, would be to acknowledge, for the sake of sustaining a theory, that such local lesion may exist, and to an extent to disorder the whole system by sympathy, without our being able to detect even its

existence ; and this no physician would like to acknowledge.

Again, a man in full health arrives at New-Orleans from beyond the seas, while the yellow fever is epidemic in that city ; he sleeps there a single night, and then passes on up to Memphis. Perhaps on the third or fourth day of his voyage he complains of nervous depression, headache, and loss of appetite. These symptoms recur and increase from day to day, with alternations of excitement, both bodily and mental, until the eighth or ninth day, when he first experiences a distinct, but moderate chill. A febrile exacerbation succeeds, slight and seemingly unimportant at first, but becoming more and more violent every hour, with constantly increasing pain in the head, back, and limbs, a short morning remission, quickly followed by a still more violent exacerbation, until, perhaps, on the third day from the chill, there is a sudden abatement of all these painful symptoms, and malignant gastritis appears, with all the appalling concomitants of this fatal disease. In two days more the life of the patient is extinguished, with copious ejections of black vomit.

Now, this is a case of yellow fever, contracted, as is not uncommon, by sleeping a night within the sphere of its epidemic influence. The gastritis, which appears as a prominent symptom at so late a period of the disease, is, according to all writers on the sub-

ject, the characteristic lesion, and without which yellow fever does not exist. Is it, in such a case as I have supposed, the primary affection and cause of the fever? Nothing could be more improbable; for this formidable disease does not exist for several days without making its presence known. The suffering in the head, back, and limbs, in this case, is the legitimate effect of fever from any cause whatever, and with these symptoms alone, the patient may often be cured by very simple remedial measures. But when, from epidemic influence, or some other cause not understood, the stomach becomes involved, and the physician has to contend with malignant gastritis complicating remittent fever, the disease is beyond the ordinary resources of the profession, and recoveries are only the exceptional cases.

We have seen that some authors have made fever to be dependent upon conjectural changes in the constitution of the blood and other vital fluids, and some upon disordered action of the solids. Others, again, have contended that the brain and nervous systems should be primarily influenced by the exciting cause. To these hypotheses have been superadded others, concerning pathological conditions in some degree incidental to febrile action, having relation to the existence of spasm, constriction, excitability, debility, local irritation or inflammation, follicular and membranous disorder, etc. But all these appear to have

been founded only upon assumed facts, or deduced from deceptive *post-mortem* appearances. It has not been proved, in a single case of fever, that these changes in the constitution of the blood, the condition of the solids, the action of the brain and nervous system, the spasm and constriction of the capillary vessels—if any such there be—the existence of debility, excitability, local irritation, or follicular and membranous inflammation, one or all, have always existed as a condition precedent in idiopathic fever. No one of these conditions has been proved necessary to the existence of fever, nor is any one of them certain to produce fever, when it occurs from any other cause than fever itself. If, then, fever may exist without any of these conditions, and each and all the conditions exist without fever, we may safely conclude that they are not the proper causes of fever or in any way essential to its existence.

Notwithstanding the general belief, in times past, that a final quietus had been given to the humoral pathology, a strong disposition has lately been shown to revive it, or at least to acknowledge the primary disorder of the blood as the cause of fever. Physicians have, indeed, ventured to proclaim fever a blood disease, professing to have ascertained, that even the graver forms, so fatal to northern men in hot climates, are due to a deficiency of saline materials in the blood. This deficiency is supposed to be caused by

the entrance of the cause of fever into the blood-vessels, corrupting their contents by chemical action. It has been shown, too, we are told, that changes in the blood, similar to those accompanying fever, are produced, by injecting certain putrid matter into the veins, causing fermentation of the blood, even while in performance of its vital functions. Strange to say, it has been inferred, from experiments of this kind, that all fever is dependent upon this process of decomposition of living fluids, while circulating in the living body.

Notwithstanding the inconsistencies involved in all these experiments and observations, there is much plausibility in this modern phase of humoralism; but not more, certainly, than in various other hypotheses to which I have referred. The great difficulty with all of them is, they are not proved to be true. They are not, any of them, founded upon established data, and we must consider them, therefore, to be mere hypotheses, the ingenious conjectures merely of learned men. The brain and the bowels have been found diseased, upon examination of the bodies of fever patients after death, and it was inferred that first one and then the other must be the exciting cause of the disease. Now it is said to have been ascertained, that the blood is uniformly disordered in fever, and with this important advantage to the new doctrine: we are enabled to determine its condition in the life-

time of the patient, and we are taught to infer from this, that it is the cause of fever. But it can, with just as much propriety, be said of the blood as of the brain and bowels, that although found to be diseased in fever, it has not been shown to be a condition precedent, and, therefore, it is just as likely to be an effect as a cause. Indeed, it is contended by some physiologists, that similar changes are produced in the blood by active exercise alone, or by whatever has the effect to accelerate, for any length of time, the circulation of the blood. Hence it may be inferred, that febrile excitement, even in its early stages, may cause this disease of the blood.

But when we contend that the cause of fever acts upon the system very slowly, producing, for several days, little perceptible change, and that weeks and even months may elapse before the febrile paroxysm is distinctly developed, it may be contended that these slow and gradual changes are dependent upon the fact, that the exciting cause has found a lodgment in the blood, which undergoes a gradual deterioration, impairing nervous power, and disordering the functions by slow degrees. This is a plausible conjecture, but it has no well-proved fact to sustain it. Nor has the doctrine of the primary disorder of the blood the negative evidence in its support which has been claimed, for we can have no more difficulty in attributing these slow and gradual changes to a

direct influence over the brain and nerves, than over the blood. Indeed, we have better reasons for believing, both from analogy and experiment, that the blood becomes diseased in such cases only through the agency of disordered innervation. I do not consider that we have better proof, therefore, that fever is essentially a blood disease, than we have that it is essentially and primarily a nervous disease.

Vitality is acknowledged to be powerfully antagonistic to chemical decomposition. In some of its forms, it resists successfully even the digestive powers of the stomach. Now the blood, while circulating in the body, is undoubtedly a vital fluid, and it is only when drawn from the arteries and veins, and exposed to the air, that it loses its vitality and undergoes decomposition. Probably it is not less vitalized than the substance of the brain and nerves, or the lining membrane of the stomach and bowels. It is, moreover, just as much under the influence of nervous power as any organ or tissue of the body, not being capable of undergoing the important process of arterialization, or of performing the offices of nutrition and the generation of animal heat, without this agency. The blood, we may suppose, therefore, to be just as likely to become the subject of secondary disease, the subject of local lesion, so to speak, as either the brain or the stomach and bowels; and while it has not been proved that it becomes diseased

at any time anterior to the accession of fever, we are justified in the conclusion, that the changes which are found to have taken place in the constitution of the blood are, like other lesions of fever, of a secondary character, and caused by febrile excitement, and that these changes in the blood are not, as has been supposed by some, the exciting cause of fever.

The tendency recently shown to return to the support of certain features in the old humoral pathology, finds no small encouragement in the modern teachings of a non-vital physiology. This lends encouragement to the doctrine of blood fermentation, or the possibility of a chemical decomposition of the blood, even while circulating in the arteries and veins, and performing its legitimate functions in the living body. Such changes once acknowledged to be possible, we can hardly refuse to concede the chemical dissolution of the solids of the body also ; and then we must hold ourselves liable, at all times, to sudden decomposition under those influences which favor the fermentation process in dead animal matter everywhere. Whether there be danger of carrying these new doctrines thus far, I do not pretend to know ; but when new principles are proposed for our acceptance and belief, it is always fair to test them by extreme views.

After all that has been written about fever, from the earliest times until now, we are forced to the

conclusion, that it is known only from its obvious phenomena. The ingenious disquisitions of able men have done little to enlighten us in regard to it. Of the nature of its primary cause, nothing has been yet discovered. Its pathology, in all its forms and phases, is involved in obscurity. It may be epidemic over a large district of country, in a city, or among a single household, and it often occurs in only a few sporadic cases here and there, seemingly quite at random, while the great majority of population escape it altogether. In regard to the character of the disease, we only know that it comes on with wonderful uniformity, in spite of the varied conditions attendant upon it ; that all parts of the body are involved in the morbid action from the beginning, and during the whole course of the disease ; that there is nervous depression and chilliness, followed by general reäction of a morbid character, and not such as follows nervous depression from other causes ; and there are remissions and exacerbations, according to a mysterious law of the animal economy, which has not yet been explained. Local lesions follow, as the effects of this febrile movement, sometimes in one organ or tissue, and sometimes in another, and these become serious almost in the direct ratio of the violence and duration of the constitutional disease. And we know that fever results in recovery or in death, under the influence of many conditions having reference to the

constitution and habits of the patient, the character of the prevailing epidemic, the seat and violence of the local lesions, the frequency of the paroxysms, and the treatment adopted.

Fever in this country, if not in all countries, is the most common form of disease, and in the practice of your profession you will be called on to treat it more than all other diseases. Sometimes it is mild and almost harmless, at others, severe, complicate, and fatal. Sometimes it is well developed, distinct and well defined; at others, obscure, masked, and not easily detected. Not unfrequently the utmost efforts of medical skill are expended for the relief of a febrile lesion, while the fever producing it is unnoticed and neglected. Nothing is more important, therefore, than that you should study the subject with the utmost care; and in doing this, I advise you to divest your minds of all prejudice and all preconceived opinions. The finely-wrought hypotheses to which I have so often referred, will be of no service to you; and from the teachings of pathologists you will derive little advantage, except as they relate to local lesions, which, in general, are to be treated as the same lesions are when they appear as primary affections arising from local causes. These are irritations and inflammations of particular organs and tissues, the pathology of which is involved in considerable

obscurity, but the diagnosis is often plain and unmistakable.

I advise you, finally, to keep constantly in view the judicious observations of Fordyce, who says, that fever is a disease which no knowledge of the structure of the human body, no knowledge of the properties of the fluids, no knowledge of the action of the moving parts, could give the smallest ground to suppose ever existed. It affects the whole system, the head, the trunk, and the extremities; it affects the circulation, the absorption, and the nervous system; it affects the skin, the muscular fibres, and the membranes; it affects the body and the mind. It is, therefore, emphatically a constitutional disease, and it is not necessarily dependent for its existence upon any local disease, although the prolific source of so many forms of local disease, affecting both solids and fluids.

LECTURE III.

INTERMITTENT FEVER.

INTERMITTENT fever is the most simple and distinct form of periodic fever, and it serves, in a measure, as a type of all other forms. Three principal varieties are spoken of by authors—the quotidian, the tertian, and the quartan—which are terms having reference entirely to the type or the duration of the intermission, the disease, in all cases, being the same. These varieties of form are subject, from some unknown cause, to certain irregularities, which have given rise to other designations as duplications and triplications of these. Other periods of intermission are also mentioned, extending variously to periods of five to twenty-one days, and even longer. All these types or forms are liable to be converted into one another ; and when those of the shorter are converted into the longer periods of intermission, the danger of a fatal termination is supposed to be lessened, and the reverse. If a quartan or a tertian ague be converted into a quotidian, it is taken as an indication of increased severity in the disease ; and when the fever

ceases to intermit and becomes remittent, as is not unfrequently the case in summer and autumn, it must be considered that there is a further increase of intensity, the disease remaining the same excepting only in degree.

Intermittent fever rarely comes on suddenly and without premonition; or rather, to be more explicit, the disease is not suddenly and at once established, with its characteristics of cold, hot, and sweating stages distinctly developed. When your patient informs you that he was attacked by the disease on a certain day, because on that day he had an ague, you cannot safely infer that this was the very beginning of the disease. On the contrary, you will find, upon proper inquiry, that he has had several obscure and ill-defined paroxysms previously, which have been marked by depression, headache, weariness, pain in the back and limbs, thirst, quickened pulse, and scanty and highly colored urine. Several such imperfect or indistinct paroxysms at regular periods, followed by perfect and distinct intermissions, precede most if not all the attacks of this disease, and the patient is often at a loss to know what is the nature of his malady, and whether he is sick enough to require medical treatment. He is scarcely aware, indeed, of being indisposed at all, excepting while the paroxysm is upon him. In many cases the patient will have made an effort to obtain relief in active exercise or an excur-

sion of pleasure, with unusual exposure and fatigue, which only served to hasten on the climax, and, when he least expected it, he was prostrated by an ague.

In any event, after several imperfect and obscure paroxysms, perceptibly increasing in violence at each recurrence, we find that all the symptoms which characterize the disease make their appearance, and we have before us unmistakable evidence that our patient is suffering an attack of intermittent fever. There is a sensation of coldness creeping along the spine, such as is never experienced from the mere influence of cold air. The features soon become pale and shrunken, the ends of the fingers and toes cold, the fingernails turn blue, and the papillæ of the skin stand out, forming what is called goose-skin. In the beginning of a chill, the pulse generally becomes smaller and more frequent than in health, and the patient is also thirsty. The sensation of coldness soon overspreads the whole body, attended by shivering and shaking, with chattering of the teeth. This sensation of coldness conveys to the patient an idea of a much greater degree of cold than is found actually to exist, as determined by the thermometer or by the application of the hand; just as a greater degree of heat is felt by the patient in the hot stage than actually exists, showing how susceptible the nerves of sensation become in both the cold and hot stages of fever. Pain in the head, with a sensation of tightness or constriction,

oppression at the precordia, dyspnea, and cough follow, with pain in the back and limbs, restlessness, nausea and sometimes vomiting, and, not unfrequently, small watery dejections from the bowels, similar in appearance to those which characterize Asiatic cholera, and sometimes these are involuntary discharges, on account of the relaxation of the sphincter ani.

The hot stage of fever follows the cold in one to three hours. It is usually characterized by great heat of skin, a considerable increase in the force, frequency, and hardness of the pulse; by thirst, dryness of skin and tongue, pain and throbbing in the head; by restlessness, anxiety, and partial suspension of the secretions. The duration of this stage is generally somewhat longer than the other, sometimes extending to a period of eight or nine hours, and gradually subsiding into the last or sweating stage. This can hardly be called a stage of fever at all, inasmuch as it appears to be only the natural result of the previous excitement. The capillary vessels being now relieved of the turgescence and excitement, which for a time has precluded a free exercise of the nutritive and secerning functions, evince certain signs of restoration to their normal condition, although still so far excited as to cause excessive action in the secretions which follow, including that of the skin. This affords the patient great relief from previous suffering, excepting only that which arises from a manifest loss of strength.

The time consumed by the cold and hot stages of fever varies considerably in different cases, and affords indications of the violence of the disease, as does, also, the length of the intermission. The shorter the one and the longer the other, the milder is the disease, and the reverse.

If not influenced favorably by curative measures, the common tendency of intermittents is to anticipate the time of the paroxysm, by changing from the longer to the shorter periods, or, in case the type is quotidian, commencing earlier in the day, and even assuming the remittent type. This is the usual course among us when the disease is not relieved by treatment, and especially in sickly seasons. Still, the disease has been considered to be of a self-limiting character, with a natural tendency toward recovery; and, in some exceptional cases, it does run a certain course without remedies, and terminates favorably. Of course, we cannot expect to meet with many such, were it only from the fact, that nearly all who are attacked by this or any other disease, are certain to receive treatment of some kind. Physicians may not always be employed, but patients fall into the hands of persons unskilled in medicine, who prescribe remedies with greater confidence than those who are. Indeed, the plan of treatment in uncomplicated cases is now so simplified, that many non-professional persons, adhering to the practice pursued by physicians,

are quite successful in their treatment. It is only when the disease is of a grave and malignant character, or complicated with serious local lesions, or when practitioners prefer to follow the teachings of charlatany, that great evils arise from such practice. They who have the good sense to pursue the proper course on such occasions, in the way of treatment, may be supposed, in general, to possess the judgment and discretion to call in the aid of a physician at the proper time.

There may be truth in the opinion so generally concurred in by physicians, that quartan agues are more difficult of cure than those observing shorter periods; but we have a type prevailing among us which is more common, and certainly not less obstinate. This observes septenary periods—that is, it recurs every seventh day, or at some longer period which is a multiple of seven, even to forty-two days, and perhaps in some cases even longer. It is not apt to prove fatal, but is difficult of cure almost in proportion to the length of the period of intermission. This may be owing to several circumstances connected with it. Local lesions, in the form of congestion or diseased hypertrophy, may exist, particularly in the spleen and liver, and, by their irritative influence, tend to perpetuate the fever as a symptomatic affection. But a greater obstacle is presented to a ready and radical cure, in the difficulty of anticipating the

recurrence of the disease by the use of the proper remedies. It is always uncertain whether the paroxysm will return at the first or any more remote septenary period, which may depend upon some accidental occurrence at or near each one of these periods, either favorable or unfavorable to its production.

The intermission is sufficiently long in any case to lead the patient and even the physician astray, as to the recurrence of the paroxysm, and the proper degree of vigilance in preventing its return is often wanting. Frequent changes in the periods of intermission, also, render it difficult to keep the run of these cases, and we are often surprised by the recurrence of the paroxysm at an earlier or later day than was expected. These cases are liable to great obscurity at certain periods, and they are, indeed, sometimes so masked, as to make them difficult of recognition, unless the physician have the patient under constant supervision.

Another peculiarity which I must not forget to mention is, that this septan type generally originates in the quotidian or tertian, and when the paroxysm returns at a septenary period, however remote, the disease generally resumes its original type, and so continues either quotidian or tertian until arrested by treatment, when it again becomes a septan; and these changes may be many times repeated. I have known fevers of this kind to continue in this way for years,

and finally yield only to the influence of some sudden change of treatment, to change of climate and method of living, breaking up old habits and associations. In general, however, the disease may be overcome by the proper use of the anti-periodic treatment during all the period of intermission, with increased doses and other attentions, for a few days, in anticipation of the returning paroxysm. Many of the relapses of fever which are constantly occurring, and presenting so many difficulties, I have no doubt are of this character, and require to be treated in the manner just indicated. For the want of proper remedial measures, this form of fever sometimes continues for several years, giving rise to chronic gastric, hepatic and uterine diseases, commonly found to be difficult of cure. The relief which we are able to afford such cases without anti-periodic treatment, is not permanent. The disease is ever recurring, and the patient is often driven from one physician to another, and to the use of a great variety of expedients and nostrums, until, from the effects of disease and quackery together, incurable derangements of certain organs supervene, and a lingering and painful illness ends in death.

This septan intermittent is often so obscure as to be difficult of detection until after several paroxysms have occurred. I have known cases in which neither the patient nor physician could be quite certain of the true character of the disease, until after

several returns of it. In one instance of several years' duration, the paroxysms recurred generally at intervals of twenty-one or twenty-eight days, and then the disease always assumed the tertian type, until relieved by treatment. The first paroxysm was marked by no other noticeable symptom than a peculiar weakness in the knees. The second exhibited, in addition, a little headache, and pain in the back, with slight evidences of febrile excitement; but with only such moderate development of the disease as not to interfere with the usual occupation of the patient. But the third tertian paroxysm was distinctly marked in all its stages, although the chill was still slight, and brought the patient—a feeble woman—to her bed. Efficient treatment being then resorted to, the fever was arrested, and she enjoyed an intermission of twenty-one or twenty-eight days from the last tertian paroxysm, when the disease returned as before. Females, I suspect, are more liable to these attacks than males, and sometimes the recurrence of the fever corresponds with the menstrual period; or, rather, there is a concurrence of the two affections whether the intermission be longer or shorter. And it is remarkable that this correspondence continues during the whole period of pregnancy, each return being attended by all the usual symptoms of menstruation, except the vaginal discharge, and sometimes even this is not wholly absent. I have observed, also, that dys-

menorrhœa is sometimes complicated with these septenary agues, and that it is not to be cured without overcoming the febrile concomitant.

Many curious anomalies occur in connection with intermittent fever, with which it is important for the student to become acquainted, that he may not be compelled to learn them from experience alone. From apparently trivial causes, it sometimes recurs at irregular periods, and when least expected, even after the patient thinks himself thoroughly cured. Exposure to cold, a wetting in a shower of rain, sudden changes of temperature, wet feet, imprudence in diet, mental emotion, drinking iced water or cold milk, and many other things which shock or disturb the system, and especially the stomach, not only bring on the chill, but change the type and the time of the paroxysm. Dr. Gregory relates the case of a student of medicine, who brought on a paroxysm after a long exemption, by striking his shin against the scraper of the class-room. Dr. Brown, the author of the article on this disease in the *Cyclopaedia of Practical Medicine*, says, he was stationed at Canterbury, in August, 1814, with a corps of cavalry, of which he had medical charge, and which had recently returned from the Peninsula, where many of the officers and soldiers, perhaps the majority, had labored under agues. The wind set in suddenly and coldly from the east, and immediately his hospital was filled with intermittents.

An occurrence similar to this took place under my own observation. In the autumn of 1848, a large number of negroes upon a cotton plantation, which had a working force exceeding one hundred, had intermittent fever, and many of them had suffered one or more returns of the disease, or relapses. By the time cold weather set in, however, they had all recovered, and several weeks elapsed without the recurrence of a single case. Upon a certain day, the weather being warm, sultry, and rainy, these negroes were employed in a field very elevated, and exposed to strong currents of air. Toward evening, a brisk breeze struck up suddenly from the north, and the slaves with their thin and wet clothing were exposed to its influence. They returned home much chilled, and the succeeding day every one who had suffered with fever during the autumn had a return of it; and all had symptoms of pulmonary congestion and inflammation. In their previous attacks, earlier in the season, the local lesions were in the viscera of the abdomen, but now, under the influence of this exposure to sudden cold, they were all, principally, thoracic.

There are cases of this kind to be met with every year, throughout the Southern States; but attacks of intermittents complicated with thoracic lesions in cold weather, are not confined to those persons who have had intermittents previously, although in general such persons are more liable to them than others.

Individuals who have enjoyed perfect health during all the previous summer, and even immigrants into malarious regions, and those who have never had intermittent fever in their lives, are liable to be thus attacked ; showing that the cause of periodic fever is not wholly destroyed by cold weather, but continues to act in certain localities all the winter, with only an abatement, perhaps, in its intensity.

Some authors speak of masked intermittents, which never come to the full development of the characteristics of the disease, so as to exhibit the usual cold, hot, and sweating stages ; and there can be no doubt, as I have before remarked, that in the forming stage there is often great obscurity in the symptoms ; but in general, I suspect, if there be a febrile movement at all, it will, unless arrested by antiperiodic treatment, show unmistakable signs of its existence. Cases not thus developed may more properly be considered diseases of periodicity without fever. Many diseases purely nervous take this form, and sometimes they are attended by distinct rigors, but these do not observe regular periods, and are not followed by febrile excitement, or the sweating stage. In situations where the cause of periodicity is rife, nearly all prevailing diseases assume the periodic character, and it is because this feature passes unobserved that such diseases are sometimes of such long continuance, and so difficult to cure. Besides neuralgia and rheuma-

tism, erysipelas, and catarrh, we meet with dysentery, diarrhea, and dyspeptic affections, which are of this periodic character, and without febrile excitement. Certain uterine affections come also within this description of disease; and infantile diarrhea and cholera infantum are particularly liable to such complication; and in the case of children, it is apt to be involved in greater obscurity than in adult persons. Escaping the notice of the physician, all the plans of treatment ordinarily resorted to in these infantile diseases fail of permanent success; and this is, in my opinion the true explanation of the frightful mortality occurring among children in certain places and seasons, from a class of diseases ordinary curable.

Intermittent fever is sometimes termed *malignant*, from the great severity of some of its symptoms, and the consequent fatality of the disease. Most of the deaths reported as caused by congestive chill, may be regarded as of this class. But all chills may with propriety be called congestive, inasmuch as congestion is one of the gravest of the pathological phenomena connected with, or caused by, the cold stage of fever. Most of these congestions are supposed to exist in the large venous trunks of the thoracic and abdominal viscera, including the portal veins; and sometimes also in the cerebral circulation. The symptoms attending chill sometimes indicate the existence of excessive, and even long-continued venous en-

gorgements, the concomitants of which are, the impairment of nervous power, the suspension of nutrition and secretion, and the derangement of the arterialized process going on in the lungs. Unless speedily relieved of these evils, we must expect that the patient will die without reäction, or that the foundation will be laid for such serious local lesions as will very materially interfere with all successful treatment, and perhaps become troublesome *sequelæ* after the fever has been subdued. It is some evidence, perhaps, of the close connection existing between the chill and congestion, that patients who suffer most severely from the latter are scarcely relieved from the former during all the hot stage which follows. Chills still continue to annoy them, and to haunt their imaginations with constant fear of returning ague, even until the reäactive process, which in these cases is irregular and imperfect, has subsided, and free perspiration becomes fully established.

In such cases as these, however, if the patient survive the cold stage, and reäction becomes established, the paroxysm is very likely to be prolonged, so as to preclude the occurrence of a distinct intermission, and the fever consequently assumes the remittent type, and in this way confirming our views as to the grave character of the disease. Such is indeed the true history of many of the cases of remittent fever which occur among us. They are at first intermit-

tent, or promise to be so, and generally of the quotidian type, the early paroxysms being indistinct and of trivial intensity ; but not being relieved by treatment, and frequently suffering injury by injudicious exposure, the disease rapidly gathers force and severity, and results in the form of attack, course, and termination, such as I have now described. It is but a simple and easy transition from one type to the other, in such a case, merely from an increasing intensity of the morbid action, and not from any change whatever in the character of the disease, or from any mingling of types under the operation of distinct causes. This transition from the intermittent to the remittent type can only be prevented by such remedial measures as will abate the violence of diseased action in the early stage. Any such abatement must create a tendency toward longer and more distinct intermissions, and toward shorter and less violent paroxysms ; and this shows the importance of early treatment, especially during the prevalence of the graver forms of fever. But I shall take occasion to urge this matter in a future lecture.

LECTURE IV.

INTERMITTENT FEVER.

IT is when we come to consider the treatment of a disease that we find it necessary to study its pathology, without a knowledge of which we are groping pretty much in the dark. Although the pathology of fever in many of its parts is so imperfectly understood, yet it appears to be established by pathologists that in the cold stage the large bloodvessels, and particularly the veins of the abdominal and thoracic viscera, including the portal system, become greatly engorged with blood in all cases of severity. These engorgements, accompanied by a circulation proportionally sluggish, are supposed to be increased in the ratio of the violence and duration of the cold stage, but whether as cause or effect cannot now be determined. The necessary effect of this disordered condition is, to engender certain visceral obstructions, which finally result in hypertrophy, or in chronic inflammation ; and thus constitute those troublesome local lesions, which always embarrass the physician

in his treatment, and, indeed, often present the most serious obstacles to success.

These congestions, always the condition to a greater or less extent of the cold stage, may by persistence become the cause of its protracted continuance. In this case, the coldness and shivering continue to be felt, notwithstanding the partial or ataxic reäction. The lungs, liver, and spleen feel the influence of this remora of the venous trunks more than other organs; and hence the liability of these viscera to become the seats of the more permanent forms of congestion, and of the chronic inflammations which follow protracted cases of intermittent fever, and which we often find more difficult of cure than the original disease.

Stasis of the blood in certain parts of the venous, and perhaps also, in some degree, in the arterial system, is a pathological condition common to all the forms of febrile disease in their cold stage, to Asiatic cholera, sunstroke, etc. And it is remarkable, that this state of disordered circulation, proceeding probably from nervous irritation, should, however severe, leave the mind of the patient almost wholly undisturbed. It is only in the hot stage, when reäction becomes violent, attended by great cerebral excitement; or in the declining period, when the nervous energy has been prostrated by disease, and a fatal termination has become imminent, with signs of asthenic congestion in the brain, that the mental faculties be-

come seriously impaired. In the cold stage of fever there is always congestion in the lungs, as is evidenced by oppression, pain, and constriction in the chest, attended by difficult or labored respiration, and a want of due arterialization of the blood. The voice becomes husky also, from this cause, and sometimes loses its proper resonance. In cold weather this congestion is prone to run into inflammation, constituting the disease commonly called intermittent pneumonia, the lesions of which are sometimes of a serious and permanent character.

It is not unfrequently the case, as I have already intimated, and particularly in persons of robust habits, that the sensation of chilliness continues, alternating with flushes of heat, during all the hot stage, and sometimes after pretty free perspiration is established. The patient, under such circumstances, becomes exceedingly restless. He covers himself up and throws off the covering in rapid succession; tosses about in his bed, rolling from side to side; complains of excessive thirst, and of feeling hot and cold at the same time, or in quick succession; says the chilly sensations are those caused by a stream of cold water running down the spine; and he expresses by fits and starts strong apprehensions of a return of the ague. These are symptoms of serious and persistent congestions, and, if not soon relieved by treatment, the pathological condition which they indicate will be likely

to result in active inflammation, and thus lay the foundation of such local lesions as are difficult of cure. Many times, no doubt, they result in speedy death, and then the patient is apt to be reported in the bills of mortality as having died of congestive chill.

These being some of the more prominent manifestations of the cold stage of intermittent fever, it is very desirable that we should be able to ascertain, if possible, what is the immediate cause of them, that means may be adopted to relieve the patient from its morbid effects. Of this cause, however, little or nothing is yet known, except what may be deduced from the pathological conditions before referred to, and whether these are produced by the influence of the fever poison on the solids or the fluids of the body, upon the nervous or the vascular system, has long been, as I have before remarked, a subject of doubt and dispute. But it cannot be denied that one of the earliest manifestations of disease is a stasis of the blood ; and it is equally certain that this condition may be relieved by the use of those remedies, the action of which is supposed to be particularly directed to the functions of the nervous system. This stasis of blood does not necessarily imply the existence of any morbid changes going on in that fluid, and probably in the inception of the disease there are none ; but we have reason to believe that the blood becomes diseased in a very short

space of time, by any interference with its healthful circulation, whether impeded or accelerated in its movements. In this case we have the evidence of our sense of sight to determine that the blood becomes thicker and of a darker color, almost in proportion to the time of the continuance of the congestion.

According to these views on the pathology of the cold stage, it is legitimate to infer, contrary to the common practice, that it is the proper time for the application of active remedial measures. The congestions constituting mainly the disease have only to be removed to obtain relief of present symptoms, and to guard the system against subsequent diseased action dependent upon this condition. And here the question arises—more important than any, having reference merely to the theory of the disease—what is the treatment to be adopted? Our patient is shivering with cold, and must be warmed. His circulation is languid, and requires excitation. He is suffering from debility, and demands support. Does it not readily occur to every one present in the sick-room that the indications are for the heating, excitant, invigorating treatment? Nothing appears more reasonable; nothing is more common; but nothing is more inappropriate. Sthenic congestion, like this, is not to be relieved by excitants and tonics. Sedatives and narcotics are the remedies indicated. Millions of lives have been sacrificed to sthenic congestion, for

the want of a proper understanding of this subject, and therefore it is a question of great interest to the student of medicine.

Not to go farther back than the time of Cullen, we find that he promulgated a system which had for its basis the assumed existence of debility in such cases ; and that while he was denouncing the practice of founding new medical theories upon false facts, he was himself enabled to establish a system, which was for a time almost universally received as true, and which has influenced other theorists even to the present day, having no better support than the assumptions so loudly condemned in others. From his authoritative teachings, the bugbear debility found its way into every theory of fever, and gave tone and direction to every system of therapeutics. It over-spread the world as with a pall of fatal error, the gloom of which has not yet been wholly dispersed by the rays of modern science, and by the illuminations of the Baconian philosophy. It is important that you should be enabled to resist these potent influences, and to learn, that it is not debility with which you have to contend in ague, but the very reverse, plethora and sthenic congestion. Of the truth of this, you have sufficient evidence in the vigorous reäction which follows.

Opium, in view of the nervous character of the chill, may be successfully used to overcome the irrita-

tion which lies at the foundation of the congestions in certain of the viscera. When given in full doses, and in the very inception of the disease, the relief afforded is positive and striking. The venous engorgements gradually subside under its influence, the blood flows on more freely in its natural course, tending to equalize the circulation in all parts of the body, and also the animal heat, checking at the same time the chill and shivering which attend upon, and which are perhaps caused by, the temporary and partial suspension of power in that portion of the nervous system which presides over the circulation of the blood. When relief is thus afforded, the pulse, from being small and rapid, becomes in a short time full and regular, the febrile reäction is facilitated and at the same time moderated, and the patient passes through the hot stage with comparative ease and rapidity. All this seems to be sufficiently favorable, and in many cases these results may be readily secured by the judicious use of opium; but there are objections to the practice which are worthy of careful attention. The secondary effects of opium are, to impair the tone of the digestive organs, cause more or less of cerebral torpor, suspend to a considerable degree the secretions, and produce constipation of the bowels. Unless measures be taken to obviate these difficulties, more or less of discomfort, and not unfrequently serious hindrances to a final cure of the disease, follow.

Just in proportion to the severity and continuance of the disease, and the consequent suspension of glandular action, does the use of opium appear to become objectionable. You will find, that in the several stages of all forms of febrile disease, when nervous derangement is partially relieved, the secretions, excepting in some cases those of the skin and bronchial tubes, are impaired or suppressed by the use of opium ; and in those forms commonly denominated malignant, it is liable to produce even fatal effects.

Chloroform in doses of a fluidrachm, more or less, and repeated as its effects subside, will accomplish in most cases all that can be expected of opium in regard to the nervous system, and without the objectionable features of the opium practice. I have had less experience with this remedy than with the other, but it appears to possess all the power of opium over the irritative stage of fever, and it may be given without those risks of injury to the digestive, cerebral, and glandular functions to which I have alluded. I have known the chill of an intermittent to be relieved by it more promptly and effectually than by any other remedy, moderating also the stage of reaction to an extent which rendered it almost imperceptible ; thus placing the patient, with little loss of time, in a condition to receive the proper treatment for the period of intermission. This remedy is said to have been administered with similar effects by in-

halation, but I have not used it in this way for such purpose, and should deem the exhibition by the stomach preferable on the score of safety. No risk of fatal or injurious effects is incurred by the use of chloroform in drachm doses, but it must be borne in mind that its effects are much less permanent and lasting than those of opium, a frequent repetition of the dose being necessary to a prolonged influence of the remedy.*

Narcotism, from an early period in medical practice, in whatever way produced, has been considered remedial in intermittent fever, and doubtless it is so in the cold or irritative stage. The use of narcotics, in some form, has been common, also, in all the varieties of charlatanry. Opium, aconite, cannabis, conium, stramonium, arnica, hyoscyamus, humulus, lactucarium, hellebore, nicotianum, gelsemijnm, etc., have all been used with varying success; to which may be added alcohol, ether, camphor, and chloroform; not forgetting the soothing influences of music, and of monotonous sounds. Narcotina, it is said, may be successfully substituted for any and all other narcotics, as quinia is for cinchona. The widespread and long-continued use of such means would seem to favor the opinion, that fever in its early stage is essentially a nervous disease.

* These views, put forth in 1852, have been fully confirmed by subsequent observation.

Bloodletting has been found to operate not less promptly and favorably than narcotic remedies, in affording relief to sthenic congestion connected with the chill of intermittents. It is supposed to operate by unloading the engorged bloodvessels, and thus facilitating the movement of the blood. Perhaps it acts by restoring cerebral and nervous energy. Particular organs are relieved of congestion by topical bleeding in their vicinity; and a similar effect is said to be produced, but somewhat less promptly, by retaining a considerable portion of venous blood in the limbs by means of tourniquets and ligatures; thus affording partial relief to internal organs of the remora by which they are oppressed. But whatever may be the nature of its action, there can be no doubt of the efficacy of bloodletting in the relief of congestion in chill and kindred affections. Before the introduction of chloroform, I gave it a preference in general over opium, because not only of the prompt relief afforded by it, but also of its better influence over the subsequent stages of the disease. Even now, when it so happens that decided relief has not been obtained by other means, and particularly when there is evidence of partial reaction, attended by hard pulse and febrile heat, accompanied by chilly sensations, bloodletting is to be preferred over all other remedies.

In this connection it must be particularly observed, however, that in the use of bloodletting for the relief of

sthenic congestion, great caution must be exercised on account of the temporary depression of vital or nervous power in such cases, and the liability, by consequence, of collapse from sudden depletion. Reaction is to be induced, in cases of severity, by the abstraction of blood slowly, or by bleedings several times repeated. It sometimes happens, that faintness is produced with the patient in a sitting posture, by the sudden loss of only a few ounces of blood. But after several small bleedings, with proper intervals of rest, some degree of general reaction will have been induced, and then a freer loss of blood can be borne without inconvenience. A large and sudden abstraction of blood in such case would be likely to prove fatal ; but the danger of this is very much lessened by the fact, that in general it is impossible to draw from a vein, in the outset, any such quantity of blood. The veins may be full and large, and one being freely opened with the lancet, the blood will flow in full stream for a moment, and then cease almost entirely ; it will come trickling down the arm, and fall into the vessel, thick and dark, drop by drop. The venous circulation is too sluggish for the blood to run freely ; perhaps its passage from the arteries to the veins, through the capillaries, is retarded for want of nervous energy ; but when a partial relief of the remora is obtained, then the required quantity may safely be taken in a full stream, and with great relief to the patient.

Care must be taken also not to confound the sthenic congestion of chill, with that which attends upon an asthenic condition of the system, arising from hemorrhage, or other cause of prostration, and which in its external manifestations is very similar. Bleeding affords relief in both cases much alike; but while in the former the strength of the patient improves from the loss of blood, and the relief thus afforded is durable, in the latter the strength is impaired, and the symptoms of congestion return with increased force. It is just in this way that superficial observers are sometimes led into fatal error by anemic congestion. Each bleeding enhances the evil sought to be remedied by it, although decided relief may be temporarily afforded every time venesection is repeated. I have known a feeble woman to be bled in this way until she became exsanguious, and died of exhaustion. Opium and chloroform, and even alcoholic stimulants, and the preparations of iron, are more suitable remedies for anemic congestion, together with nutritious food. The sudden prostration of the system in sunstroke, and from taking large draughts of cold water while the system is heated by exhausting exercise, proceeds, I apprehend, from asthenic congestion, and these affections are to be relieved by opium, chloroform, and tonic remedies, and especially by full doses of chloroform.*

* Since this was written, I have had some experience with chloro-

Excitant remedies are generally recommended during the chill, and under certain restrictions they are useful. As there is no permanent debility to be overcome, but only temporary prostration from a sluggish circulation of the blood, no other than the most evanescent stimulants should be given, such as ether and carbonate of ammonia. Externally, the most effectual is mustard. So powerful indeed are sinapisms in these cases of temporary vital depression, that I have often felt inclined to attribute to them other virtues than those of a mere rubefacient. Certain it is, they are more effectual than other remedies of this class. Even in cases where bloodletting is indicated and essential to relief, vitality often requires to be sustained by stimulation, at the same time that the lancet is used. Without this in violent cases of sthenic congestion, sudden and dangerous prostration might follow the loss of even a small quantity of blood. We meet with few diseased conditions in practice which require more care and skill in the treatment than these of great prostration of vital power from congestion, arising from whatever cause it may. The most common causes are chill, hemorrhage, and concussion; but sometimes formidable cases arise from some ner-

form in sunstroke, fully confirming this view. It may be given with prospect of relief, even after the sufferer is unable to swallow other remedies. Pure chloroform poured into the mouth will be swallowed after the patient is insensible, and unable to swallow water.

vous derangement in pregnancy, and in dysmenorrhea, requiring skill and judgment in their treatment ; for it is not always an easy matter to determine, on the instant, whether the disease be of a sthenic or an asthenic character.

Emetics are often useful in relieving patients of chill, and their application seems to be indicated by the operations of nature ; for we find it very common for vomiting to occur during a chill, and in cases of congestion from other causes, and some degree of relief is obtained from it, together with a tendency to reäction, with returning warmth, and an equalization in the circulation of the blood. Tartar emetic is our best remedy for this purpose, because of its prompt action and contrastimulant effect ; but for children the ipecacuanha is a safer remedy, and for them it is scarcely less efficient.

The hot stage, which usually follows the chill in from one to three hours, requires the application of those remedies which have the effect to mitigate and subdue excitement. Bloodletting, when it has not been previously and sufficiently used in the chill, becomes necessary in the stage of reäction, whenever the febrile excitement is so violent as to endanger the integrity of vital organs. Its curative power is probably less in the hot than in the cold stage, but it may be used with less danger of any immeditate prostration of strength. For internal use, I have found nothing

so valuable as the tartar emetic, in small and frequently repeated doses; and generally its efficacy is increased by the simultaneous use of the nitrate of potassa. This may be given in ten to twenty-grain doses, and even in larger quantity, conditioned upon the ability of the patient to swallow and retain a large quantity of diluent drink, which seems to be necessary to prevent the irritative effect of the nitrate of potassa upon the coats of the stomach. The uncertainty about this makes it better not to combine the two remedies, but to administer them separately.

To obtain the best effects of tartar emetic as a febrifuge, it must be given in such doses as to cause and sustain a slight degree of nausea, without vomiting. You may begin with doses of one sixteenth of a grain, and repeat it every hour, or half-hour, increasing the quantity very gradually, until the patient complains of slight nausea, and then the object will be to sustain this nausea; to do which it will sometimes be necessary to increase the dose to one eighth of a grain. Indeed, some will require this from the beginning. Should the nausea become distressing, and vomiting occur, the medicine may be suspended for two or three hours, and then upon resuming it the patient will bear larger doses than before. But it is important to know, that whenever there is a strong tendency to gastric disorder, and especially in yellow fever, the prominent local lesion in which is gastritis, tartar

emetic is always injurious, and cannot be used. This is one of the great difficulties in treating this formidable disease. We have to forego the use of our best febrifuge remedy. This medicine unfortunately is frequently adulterated. It should always be purchased in the crystals.

Cold water is a most valuable refrigerant remedy in the hot stage of intermittents, and, besides forming the principal drink, it should be freely applied externally, and particularly about the head and shoulders, the extremities being kept warm. But the most powerful refrigeration is produced by using cold water in the form of enemata; while by this means also the lower bowels are relieved from the irritating influences of accumulations of fecal matter. Local bloodletting must sometimes be resorted to, to relieve certain organs of tendencies to serious local lesion. The brain and the viscera of the thorax and abdomen are all liable to become implicated in the morbid excitement of fever, to an extent which seems to be beyond the power of general remedies to cure. I have often known headache, dyspnea, vomiting, and pain in the viscera, to resist every means of general treatment, until cups or leeches were freely applied in close proximity to the suffering organ. Blisters and sinapisms, as well as various rubefacient lotions, are used for the same purpose as local bleeding; but they are, in general, less efficient; and sometimes it is improper to use them to much extent, while a high state

of febrile excitement exists, lest they may increase the local inflammation by sympathy ; and this is the very time when relief is most needed.

The supposed signs of inflammation which seem to call for these measures of relief, are sometimes remedied by the pretty free exhibition of opium ; hence the credit which this remedy obtains with many in the treatment of inflammation. But, I think, if you observe its effects carefully, in all the different stages of fever, you will agree with me, that our principal chance of benefit in the use of opium is in the forming or irritative stage. When inflammatory action is established, and the functions of nutrition and secretion suspended, opium is always injurious. And this is not only the case while undue arterial action continues, but upon its subsidence, and until the functions of nutrition and secretion are well established. As opiates are in such general use in the treatment of disease, you will do well to remember the caution conveyed by these remarks. The physician meets with no greater temptation in practice than that of affording present and temporary relief to painful symptoms by the use of opium. Many times he gains credit to himself by such exercise of skill, when the ultimate suffering and danger are greatly increased, and even such mischief done as proves irremediable. It is always bad practice to secure present comfort and approbation at the risk of subsequent evil ; and when human life is endangered by it, it is criminal.

LECTURE V.

INTERMITTENT FEVER.

THE sweating, which follows the hot stage, is a period of comparative rest and relaxation, and an effort of nature to return to the healthful performance of the functions. These healthy movements, having been for a time partially suspended, are resumed with increased vigor. This appears to be the natural consequence of the sudden restoration of nervous energy ; and the patient is, to all appearance, once more free from disease. He passes through the intermission, whether longer or shorter, with little other signs of deviation from health than a partial loss of muscular strength. It is one of the unexplained phenomena of intermittents, that the patient should, during all the period of intermission, seem to be free from disease ; and yet be liable to a return of the febrile paroxysm after a stated interval, with evidence of increased violence at every such recurrence. To prevent such return is now the object of treatment, and we are fortunately in possession of means of cure, which, if judiciously applied, are so certain in their effects, that

it is a reproach to a physician not to be able to accomplish such object. The process is, indeed, so simple, that even unprofessional persons soon learn the necessary routine of treatment, which enables them, in uncomplicated cases, without the least knowledge of pathology and therapeutics, to conduct such cases to a favorable issue.

Quinia, in some of its combinations, is the remedy most relied upon in the treatment of intermittents, the bisulphate being most commonly used; and it is an object of the first importance to learn how to employ this remedy, so as to secure the most prompt relief, with an expenditure of the least possible quantity. Many different plans of exhibition have been proposed, and such is the remedial power of quinia, that cures are effected by all of them. Each has, accordingly, its advocates; but I suppose there can be little doubt that the best effects of quinia are to be secured under precisely the same conditions which appertain to the most successful operation of diuretics, tonics, astringents, etc., namely, those which favor secretion, nutrition, and absorption. These conditions exist, in their fullest extent, only in the intermission. Quinia I consider to be properly a contrainstinctive remedy, its efficacy as an anti-periodic depending, in some measure, upon the degree of sedation it produces. Nevertheless, it is undoubtedly true, that in the exacerbation of fever it acts, unless

given in very large doses, as an excitant, enhancing nervous and arterial energy, and, of course, increasing the intensity of the febrile action. To guard against this evil, if quinia be given in the exacerbation at all, which is quite unnecessary in intermittents, it must be used in such large quantity as will certainly produce sedative effects, subjecting the patient to those characteristic and sometimes painful effects of the remedy, which may be considered *toxical*. The fever may be subdued, and periodicity may be overcome by this method, but the nervous system is liable to receive a shock which may result in lasting injury. Nervous sensibility and the vigor of all the senses are more or less impaired by it; those of hearing and sight are sometimes nearly destroyed, and partial paralysis and mental imbecility are entailed upon the patient for life. These are the mischievous effects which bring this valuable remedy into disrepute, and which deter some persons from using it at all.

My advice to you, therefore, is, to give quinia in the intermission exclusively; not because it will not effect a cure if given in the exacerbation also, but because it is safer and more efficient given in the *aprexia*. Various plans in regard to the dose, and its repetition, have been recommended, no one of which deserves to be regularly followed, because different constitutions are differently affected by it, some persons being more readily impressed than others; and

allowances are often required to be made for the condition of the digestive organs. The plan which I have generally pursued is, to begin with the remedy in one or two pretty full-sized doses for the particular patient in hand—say five to ten grains—and then to repeat in doses reduced in quantity, according to the effects produced ; continuing it not only until the hour of the expected chill is passed, but until so much time has elapsed that there will be little danger of an attack ; and then it is suspended until the next period of intermission or expected return, when the same course is repeated with reduced quantities ; for the danger of a return of the paroxysm is very much lessened by every period passed under the influence of quinia, without its recurrence.

It will readily occur to you, that the object of this plan of treatment is, to put the patient under the full influence of quinia some time before the hour of the expected paroxysm, and then to sustain this influence with smaller doses, as occasion may require, until all danger is passed. But a course of quininization quite the reverse of this is recommended by some ; that is, to begin with small doses and gradually increase them ; the objection to which is, that the anticipating chill sometimes comes on before the patient is brought under the influence of the remedy. There are cases, however, in which it is better to pursue a different plan from that just recommended. Sometimes the

patient labors under great distress from the sedative effects of quinia. In others there is an irregularity in the hour of the paroxysm ; the chill coming on either earlier or later in the day. In others, again, the type is complicated by becoming doubled, or is converted into one of longer or shorter intermission. In these, it is generally better to give the quinia in smaller doses—say two or three grains—and extend the treatment over a longer period of time. The patient may begin the course of quinia soon after the exacerbation has subsided, even in the sweating stage, and take from one to three grains every two or three hours, for several days and nights in succession, except while sleeping ; always taking care to reduce the dose or to prolong the intervals between them, whenever decided quininism is produced ; but not on this account to suspend them entirely. This is, in fact, quite an efficient method of exhibition, and one which is successfully practised in the use of various nostrumis for the cure of ague, and of which quinia forms the basis.

The secret of success appears to be, in keeping up the action of the quinia without interruption. If the dose is small, it must be repeated the oftener. And it is important to observe, that when the effect is once fully established, as evidenced by roaring in the ears and partial deafness, much smaller doses are required to secure its continuance than it took to pro-

duce it. In many cases, even a single grain every two or three hours will prove sufficient to perpetuate this condition, and thus prevent a recurrence of the paroxysm. For the want of a knowledge of this fact, patients are sometimes served with much larger quantities of this remedy than are required to produce the desired result. No remedy in use, perhaps, is more decidedly cumulative in its effects than quinia. If, therefore, the large doses which are necessary to be given are often repeated, great discomfort and even injurious effects are likely to follow.

There are adjuvant remedies also to be employed, the most important of which are diluent drinks. Whenever the system is in that condition which is favorable to absorption and secretion, their remedial effects are striking. Hence the credit which many vegetable substances, of little or no therapeutic power in themselves, have obtained in the treatment of intermit-tents. It is the water of the tisane which is remedial, and not the ingredient which renders its exhibition agreeable to the patient. The effect is materially enhanced by inviting the action of the diluents to the skin by warm covering, without which their influence over the secretions is mainly directed to the kidneys. In this way they are useful, too, no doubt, but according to my experience, the maintenance of the secretions of the skin is more important. While free perspiration exists, there is little danger of a chill.

But there is another feature in the disease which must receive attention, if you intend to render your patient secure, and that is, the danger of a recurrence of the paroxysm, or a relapse, on the seventh day, or on some other day, generally the multiple of seven, after the last appearance of fever. And this recurrence of the disease may happen again and again, until, growing into a habit, it may become difficult of cure. In this way it is not very uncommon for intermittents to continue to harass the sufferer for several successive years. Quinia proves, in general, to be an effective remedy, if taken daily during all the intermission, or if its use is resumed a day or two before the expected paroxysm; but in many such cases, and especially in such as have been much treated by quinia, arsenic proves a more certain remedy. The beneficial effects of quinia in the treatment of cases of this kind, is generally increased by the use of some of the preparations of iron. Bismuth, zinc, copper, and strychnia are all occasionally used, and not unfrequently the bark, in substance, answers a better purpose in this chronic form than the quinia. But it often happens that some alterative course is required, in addition to the antiperiodies. Mercury and iodine are the best remedies to answer this indication, and it seldom happens that a patient suffers from a protracted intermittent without such local lesions as require one or both these remedies for their

removal. It is not prudent, therefore, to neglect this matter, and confine our whole attention to the periodic movement.

This extended course of medication may become necessary, from the fact that the patient is all the while exposed to the cause of the disease, and, notwithstanding its temporary suspension, a new period of incubation may be inaugurated, and develop its results in the usual time; and this development may be hastened on by exposure, by errors in diet, mechanical injuries, and any other occurrence which causes any considerable disturbance to the healthy action of the system. The chronic congestions and hypertrophies, which are apt to arise from intermittents of long continuance, may also act as exciting causes, and even produce symptomatic fever; which will be dependent upon the proper cause of intermittents in their idiopathic form, only so far as to give the disease the usual characteristic of periodicity.

It is not always a matter of indifference as to the form of administering quinia. The most convenient is that of pills, and the sugar-coated pills now so elegantly prepared, have the advantage of saving the patient the annoyance of the bitter taste. But the absorption of the medicine is supposed to be somewhat less rapid when given in this way, and should the patient be under the operation of a brisk cathartic, the pills will often pass entirely through the bowels

without being dissolved. In such case, of course, no benefit can accrue from them. I have known patients to take many doses in this form, and with this result, before the cause of their non-action was discovered. Pills of the bisulphate of quinia, made up by an admixture of elixir of vitriol, converting the quinia, in part at least, into a full sulphate, and rendering it proportionally soluble, answer a better purpose; and whenever immediate action is required, the pills should always be made in this manner. But there are several other forms of exhibition, some one of which may sometimes be preferable to pills, in case of urgency. The quinia diffused in water, coffee, or tea, with the concomitant of some acid drink, is a good method. But if the bitter taste is not objected to, and for children, to which it is often difficult to administer the remedy in any other way, it may be given with still better effect in solution. Water, acidulated with tartaric acid or elixir of vitriol, or lemon syrup, or glycerine, may be used as the solvent, and the bitter taste may be partially obviated by the addition of licorice.

Opium is considered by many to be an important adjuvant to quinia. But you are all aware that quinia and opium are remedies of an entirely different character, and sometimes one may be indicated and not the other. It is mostly—perhaps exclusively—in the irritative stage of fever, and in the very incep-

tion of the disease, that opium is useful. In the more advanced stages, when disordered functions have supervened, and it has become a prominent indication to restore secretion and nutrition, the use of opium and its salts is always objectionable, because the effect is, to increase the very evil that should be remedied. The objects sought to be obtained by opiates can, in general, be better secured by the use of some other narcotic, such as stramonium and hyoscyamus.

A multitude of other remedies have, at various times, been urged upon the attention of the profession as substitutes for cinchona and its salts; but each and all of them have proved so far inferior to quinia in the estimation of medical men, as to fail of acceptance as such. Among these, arsenic deservedly holds the most prominent place, and is fully entitled to be ranked next to quinia. The common objection made to it is, that it cannot be relied upon to arrest a chill so promptly and certainly, and that its continued use for several days or weeks, subjects the patient to danger from its toxic effects. I have met with no confirmation of this apprehension in my practice, but have, on the contrary, observed less injurious effects from the use of arsenic than quinia; and I am not by any means convinced that the former is less prompt and efficient in its remedial influence than the latter. Given in conjunction with quinia, arsenic produces the happiest effects, and

enables us to reduce the dose of quinia so as to avoid all unpleasant constitutional influences. In cases where the use of quinia is precluded by some idiosyncrasy of the patient, the arsenic is by far the best substitute I have ever prescribed. It is especially useful, also, and superior to quinia in intermittent neuralgic affections, which rarely ever resist the curative power of this remedy, especially if aided by the use of stramonium, to moderate paroxysms of pain. In the intermission of fever, whatever may be the type, the patient may be brought under the excitant influence of arsenic almost as readily as under the sedative power of quinia, and there is scarcely less security against the recurrence of the paroxysm in the one case than in the other. But to obtain these favorable results, I have found it necessary to use the arsenic in substance, rather than the arsenite of potassa, or Fowler's solution. The latter formula, how convenient soever it may be, has proved much less efficacious in my hands, and also a less agreeable remedy. In full doses, it has the disadvantage of causing preternatural heat in the stomach, which alone is a very serious objection to its use, whenever there is gastric complication. None other than the pure crystallized arsenous acid should be used. It may be made into pills with gum and licorice, each containing one tenth or one twelfth of a grain, and, ordinarily, one such pill is sufficient for a dose, but in

urgent cases two may be given. Three tenths of a grain a day may be given to adult persons, and the duration of the course may be made to depend upon the production of constitutional influences, as evidenced by the peculiar effects of the arsenic upon the eyes and eyelids. When these appear, it is prudent to suspend the remedy until they subside. Indeed, they are proofs that all has been accomplished by the remedy that can be at present, by establishing its constitutional action.

Of the mineral remedies, zinc, iron, and copper are next to be preferred. The sulphate of zinc, in as large doses as can be borne without emesis, will often arrest the disease by itself; and, when united with quinia, it enables us to reduce the quantity of the latter materially. I have succeeded in curing septan agues of long standing by this combination, and have found the effect quickened and improved by the addition of full doses of gelsemimum. In anemic cases, the preparations of iron are more efficacious, but it is requisite that such doses be given as will produce fulness and pain in the head. I doubt whether there is much difference in the remedial efficacy of the various preparations of iron; and I have generally selected that most agreeable to the patient, or most easily exhibited. Sulphate of copper too has been highly recommended as an antiperiodic, but I have had little opportunity to judge of its powers from

personal observation. Sulphur, iodine, and the mineral acids have also been advised. The nitric acid is said to have very decided antiperiodic qualities ; but in my hands it has not proved very successful. To make it so, I apprehend, it must be used in doses inconveniently large.

Many and various are the vegetable remedies, other than those already mentioned, which are used in the treatment of intermittents. Some of them doubtless possess antiperiodic power, but in general they cannot be so concentrated as to become efficient on this account, and in all probability they owe their good effects mostly to the fluid used as a vehicle. As instruments for the employment of diluent drinks, the numerous herbs in common use in the treatment of intermittents are to be regarded with favor, and to be ranked indeed among our most valuable adjuvant remedies. I know of several large plantations south of us, upon which the only remedy used for the cure of intermittents is a decoction of corn-shucks. This is pressed upon the patient with great assiduity, and in large quantities, while other measures are taken to secure full diaphoretic and diuretic effects. With such examples before us, we must acknowledge the propriety of encouraging the use of such means, at least as aids to other and more active remedies.

As the spinal nerves have been supposed to have much to do with the phenomena of fever, various

applications to the spinal column have been recommended as remedies, or preventives of chill. Among the most prominent are, dry cupping, sinapisms, and other rubefacients, and long-continued clapping with the hand, or a strap. Each of these has its merits, and I have witnessed good effects from them, and especially the last. The effect is to equalize, in a measure, the circulation of the blood, relieve nervous torpor, divert the attention of the patient, and produce a comforting glow of warmth over the whole body. If it be true, as I have supposed, that intermittent fever in its early stages is a nervous disease, there are good reasons for attention to all those agencies in its treatment, which promise wholesome influences over nervous power. And it is upon this principle, I suppose, that we are advised to resort to the use of narcotic remedies, which were more relied on in ancient times than they are now. This practice, like many others formerly in high repute, has been too much neglected, since the profession have come to look upon quinia as possessing almost specific power over periodicity. Opium, camphor, aconite, stramonium, alcohol, and many other articles supposed to exercise peculiar influences over the nervous system, have long been in use. But chloroform is a more recent remedy belonging to this class, and it seems to promise more extensive usefulness than either of the others. In such doses as will produce composure and sleep, it

wards off an approaching chill with considerable certainty ; and some contend that it possesses in no small degree antiperiodic powers. The best effects are to be expected from its exhibition by the stomach. It sometimes causes vomiting, but even then it is beneficial, and perhaps only a little less so on that account, for vomiting itself is remedial in chill and congestion, and is one of nature's means for their relief. It can scarcely be doubted that the spider's web possesses in some degree antiperiodic virtues, but it has not proved to be sufficiently active to come into general use. The remarkable effects sometimes reported of it have been owing in part, probably, to the influences exerted over the mind. Many have been the successful schemes of cure founded upon such influences alone, but we must not place these among our reliable remedies. Faith is worth something in the treatment of disease, and physicians are justified in its employment, so far as to give patients confidence in themselves and their remedies ; but the errors and delusions of superstition should very rarely be resorted to by men of learning and science.

Purgatives are nearly always necessary in the treatment of intermittents, but whenever the fever is arrested in its early stage, the purgative treatment required is only, in most cases, of the mildest character, and purgative doses need not be often repeated. But in case of a longer continuance of the disease,

the vital functions become so much disordered, and the local lesions so established, as to require a continued and persistent plan of moderate catharsis, for the double purpose of stimulating healthy glandular action, and the evacuation of morbid excretions from the bowels. Without the design of producing the constitutional impression which is evidenced by salivation, mercurial remedies should be employed to such an extent as will certainly effect, to a perceptible degree, both intestinal and hepatic secretion. The rest may be done by aloetic and other purgatives, often repeated, in moderate doses.

The physician should always be on his guard against unnecessary and excessive medication. But it is not less important that he should ever bear in mind the imperative duty, when called upon for professional advice, to adopt a plan of treatment which promises for his patient the most speedy and permanent relief. The expectant plan taught and practised by the French school, aided by the superstitious influences of homeopathy, and the prejudices arising from the mischievous effects of mercury, quinia, and other effective remedies injudiciously used, have had the effect to encourage plans of treatment, especially in large cities, where fashion governs medical practice as it does the cut of the coat, which, without being more effective than the infinitesimal system, are without the advantages which that system affords in its rigid

and formal regimen. These extremes are to be avoided in the treatment of intermittent fever, but without forgetting that a long continuance of the disease, even in its mildest form, always endangers the future health, and the life, of the patient. To the motto, "*Safely, speedily, and pleasantly,*" I would have you add, *thoroughly*.

LECTURE VI.

REMITTENT FEVER.

THE term remittent is used to designate a grade of periodic fever next higher in degree of violence than the intermittent. Both are without doubt the product of a common cause. This may, therefore, be considered the same disease which we have been describing under another name, proceeding from a somewhat more intense operation of the febrile cause, and consequently exhibiting very much the same phenomena, only of a more serious character, and requiring a treatment proportionally more prompt and efficient. We have seen that intermittents are generally deemed more serious in their character in proportion to the shortness of their periods of intermission, quotidiants being more severe than tertians, and these more severe than quartans. And it may be considered as generally true of quotidian fevers that they are of a graver character, pretty much in proportion to the length of the paroxysmal period. When this period extends over nearly the whole twenty-four hours, without sufficient interval between the parox-

ysms for the establishment of a complete epyrexia, they become remittent fevers. In determining the type of the fever something depends, no doubt, upon the constitution of the patient, and his predisposition to the disease, as well as upon the relative power and activity of the exciting cause; for we find all grades and types prevailing at the same time, and in the same place, from a septan and quartan ague to the most violent remittent fever.

Another proof that these different types of fever are dependent upon a common cause is to be found in the fact, that they not unfrequently become merged into one another. Thus a quartan may become a tertian, then a quotidian, and finally assume the remittent type, and end in the destruction of life, with all the appalling conditions attendant upon remittent fever of the most malignant grade. Remittents are also sometimes, after being partially relieved by treatment, converted into intermittents; and I have known cases of that troublesome form of intermittent called septan ague, to have their origin in severe attacks of remittent fever. These were remittents which had been relieved, but not cured by partially successful treatment. So also do we find these different types of fever existing even epidemically, in the same locality, strangers suffering with the more violent, and the native inhabitants with the less violent types and grades. While the yellow fever was prevailing with

great violence and mortality at the Bay of St. Louis, in 1820, and at Pensacola, in 1822, at both which places there were two distinct classes of population, natives and strangers, the former, or the creoles, as they are called, were favored in the comparatively quiet enjoyment of fever and ague, from which they all recovered ; while the unacclimated inhabitants were dying under similar exposure, with black vomit. And it sometimes happens, as I can bear witness from personal observation, that persons imperfectly acclimated are taken with intermittent fever, while yellow fever is prevailing as a fatal epidemic, which after two or three paroxysms passes into the remittent type, and then very soon takes on all the characteristics of the prevailing epidemic, and reaches a fatal termination in the usual time, with all the dreadful sufferings which attend upon the dying hours of the worst form of disease which now afflicts the human race.

Remittent fever is endemic in the West and South, and, compared with the intermittent type, is apparently becoming more common. It prevails most extensively and severely in the autumn months, and therefore is sometimes called autumnal fever ; but it is met with at all seasons of the year. Newly settled districts of country, and rapidly improving cities, are more liable to its visitations than other places, and it is likely to assume a graver character in warm than in cold latitudes. But it prevails extensively on the

borders of the great lakes of the North, as well as in the more sultry regions of the South ; and it often proves as fatal in the former as in the latter region. Large districts of country in Ohio, Michigan, Indiana, and Illinois, have sorely suffered from its ravages during their early history, and the same is true of considerable portions of the New-England States ; while the marshy districts of Southern Louisiana have been, under the same circumstances, comparatively exempt from its visitations. It is not, therefore, a form of disease in any degree peculiar to the South, and there are doubtless extensive regions of southern country which have been brought under cultivation with less suffering from remittent fever than some portions of the Northern States just referred to. The northern counties of Mississippi, for instance, have been more exempt than the northern portions of Ohio, while in progress of settlement. Nor is it by any means true, as has been contended by Dr. Drake, and others, that southern alluvial lands, abounding in decomposing vegetation, and subject to occasional inundations, are more liable to the ravages of remittent fever than the high, dry, sandy and comparatively barren districts. The mortuary statistics of Louisiana show a larger ratio of mortality on the high than on the low lands ; and this is in accordance with the observations of physicians, having reference, however, mainly to the recent settlements on the uplands.

Although this type of fever is in general most prevalent and fatal in autumn, it often proves to be a formidable disease in winter. It is then commonly complicated with thoracic lesions, and is particularly fatal to old people and children. But in whatever organs the local lesions may be established, the disease is apt to assume a highly irritative and even inflammatory character when it prevails in cold weather. The commonly received theory of miasmatic influences, and the current belief that such influences are dependent upon high degrees of atmospheric temperature, have led many of our profession to the conclusion that the causes which produce these attacks in winter must have had their origin in the previous warm season. This would require in many cases a period of incubation extending over several months; from August or September even to April or May. For if long-continued hot weather be necessary to the generation of this miasm, we could hardly expect it to exist in the spring season to such an extent as to cause serious attacks of fever before June or July. The conjectural reasoning indulged in on this subject sometimes leads to strange inconsistencies. In winter it is contended that the period of incubation is necessarily a long one, because we are bound to trace the disease back to a cause which could have had no existence after the frosts of September or October. But in the spring months we are so far removed

from this autumnal cause, that we are inclined to seek for one of a more recent date, and then we talk of the miasms of spring — of vernal fevers arising from vernal causes. In the one case, we must allow for a long period of incubation, one of four or five months; and in the other, we cannot admit of one of as many weeks' duration. This, like many other things connected with fever, looks very much like an attempt to construct a theory without reference to facts.

Remittents differ from intermittents chiefly in this particular; they afford no period of a complete suspension of the febrile movement, or period of absolute apyrexia. But unless diverted from their usual course by the influence of treatment, the periods of exacerbation and remission occur daily, with as much regularity as in quotidian intermittents. As the two types differ only in degree, dependent upon the energy of the cause, and the impressibility of the patient, we must expect to meet with a great similarity in the phenomena of both. The conditions precedent, so far as we know them, are precisely the same; and if we could rely upon any premonitory signs of attack, it would be impossible to determine whether the approaching disease would assume the intermittent or remittent type. Indeed, after the attack actually comes on, it is only by its apparent violence, the well-marked characteristics of the different stages of the

paroxysm, and, more than either, by the nature of the prevailing disease at the particular time and place, that we can venture to form a diagnosis, and determine whether it is likely to assume the form of an intermittent or remittent.

Remittent fever is said sometimes to come on suddenly, and without perceptible premonition. Occasionally, the first shock of the disease is said to have been so sudden and severe, that the victim was prostrated to the earth, and even death, we have been told, sometime ensues without time for reäction. But, according to my observations in regard to the various forms of periodic disease common to this climate, such sudden attacks have always been preceded by one or more paroxysms, and generally by more than one, of a milder character. The cause producing the disease does not act thus suddenly upon the system, prostrating the powers of life by an impulsive shock; but it does its work of mischief more gradually, often very obscurely and insidiously, requiring close attention in its early stages to discover the existence of any aberrations from health. In general, these sudden revulsions are reported of cases which occur during the prevalence of fatal epidemic fevers, and it is exactly in such cases that febrile affections assume the most insidious and deceptive character, frequently leading the inexperienced greatly astray in regard to the intensity and danger of the disease. These are im-

portant considerations when destructive epidemics are prevailing, because it is only in the inceptive stage that we can hope, in the present state of our knowledge, to make such curative impressions as will prove successful. Not unfrequently it requires great discrimination to determine upon the adoption of those vigorous measures which, while they are essential to success, appear to be disproportionate to the manifestations of disease.

The common symptoms of this form of periodic fever in its inception are, unpleasant sensations of sinking and depression at the epigastrium, sometimes described by the patient as resembling the nauseating effects produced by small doses of tartar emetic. This sensation is, no doubt, one of a sedative character; and as it is among the earliest symptoms of the disease, it may be safe to infer, perhaps, that the cause of fever is sedative in its primary effects upon the nervous system. This condition of sedation is further evidenced, indeed, by a feeling of continued listlessness, by weakness in the limbs, and especially in the knees, and by an indisposition to active exercise; sometimes by drowsiness, and even profound and protracted sleep. Headache is apt to follow, but it is not a constant symptom, or of constant intensity. Probably its fluctuations in severity correspond with the imperfect exacerbations and remissions of the disease, in this its forming stage. That headache, which

is not unfrequently attended also by more or less of pain and discomfort in the spinal column, is indicative of a stage of reäction, is rendered probable by the fact that it is commonly accompanied by wakefulness, succeeding the drowsiness of the stage of sedation.

The first paroxysm that occurs of sufficient distinctness to enable the patient to see that he certainly is attacked by fever comes on with a chill, as in the intermittent type, but in general the chill is less violent, and less distinctly marked. There may not be actual rigor, and shivering and chattering of the teeth, and in these fevers of the graver kind there generally is not; but a sensation of coldness so slight as might escape observation, were it not of a peculiar and unusual character, and attended by other signs of disorder. There is a peculiar coldness or chilliness affecting the spinal column, and also coldness of the extremities, and particularly of the fingers and toes, with blueness of the nails, and also of the lips. The countenance, too, indicates by change in features and expression, that something unusual is the matter with the patient. In a short time these sensations begin to alternate with transient flushes of heat, so that the patient complains that he is hot and cold at the same time. Thirst and dryness of the mouth ensue, accompanied by more or less nausea, and sometimes by vomiting. The pulse is small, fre-

quent, and sometimes irregular. There is pain in the head, back, and limbs, with a sense of uneasiness and restlessness over the whole body, and the respiration is hurried and labored. These symptoms, which seem to indicate a sort of struggle between the chill and the fever—between heat and cold—are soon followed by a state of general excitement, the heat having finally gained the ascendancy, although the patient is still liable, upon sudden exposure, or contact with cold, to more or less of chilly sensations. The patient and his attendants are now convinced of the great increase of heat, which appears, indeed, to them to be greater than it really is. The countenance now becomes flushed, the eyes red, the skin dry and hot, the pulse full, strong, and frequent, the thirst intense and indomitable; the head throbs with pain, delirium sometimes appears, there is tenderness at the epigastrium upon pressure, with nausea and vomiting; the urine is scanty and high colored, the bowels constipated, swollen, and sometimes tympanitic; and there is a marked diminution in all the secretions.

This is a brief description of a well-marked paroxysm of periodic fever; but whether it will close with an intermission or a remission, no one can yet tell. The physician can only judge of this by the severity of all the symptoms, the general character of the fevers prevailing at the time, and by whatever he may chance to know of the predisposition and suscep-

tibility of the patient. If intermittents are the prevailing type in that locality, he will confidently expect that, notwithstanding the severity of the attack, the paroxysm will at the proper time wholly subside, or intermit. But if the more serious remittent type should be prevalent, he would have little or no hope of a distinct intermission, unless he may happen to know that the patient has secured a partial immunity from having once had a severe attack of periodic fever. When fevers of the graver forms prevail in those portions of our country where there are two distinct classes of white population, natives and unacclimatized persons, the physician will have reason to expect that the former will be much more likely, in such an attack as I have described, to have a distinct intermission than the latter. And there is a class of persons in the South, who occupy a more favorable position in this respect than even the great bulk of the native inhabitants. These are they who have once experienced a severe attack of remittent fever. They are apt, indeed, to escape entirely, but they are not wholly exempt from fever. When they are attacked by the prevailing disease, although the early symptoms may appear, as in other cases, grave and serious, we may rest assured that the disease will prove to be of a yielding character, and if promptly met by proper treatment, there will not be a second paroxysm. Observation of this fact leads many per-

sons to presume upon their partial exemption, merely from their long residence in the climate; but this alone, without having once passed through the trying ordeal of climatic fever, will not protect them. Many lives are lost every year among persons of northern birth, in consequence of this mistake.

But let us return to our subject. The fever being of the remittent type, this paroxysm will continue from fourteen to twenty hours, when a gradual abatement of all the febrile symptoms will take place, the first signs of which will be observed in the reduction of the frequency and force of the pulse, and an abatement of thirst and febrile heat. These are ordinarily followed by moderate perspiration, and an abatement of restlessness. The mind of the patient becomes at the same time more tranquil and composed. There is a manifest abatement in the severity of all the febrile symptoms, but not a total suspension of them. The patient is much relieved, and feels quite comfortable by contrast—not absolutely—frequently expressing his gratification in such manner as to induce his attendants to consider him better than he really is. This comparative calm, which nature requires after an unnatural effort of vital power—a calm not unusual in all the great and disordered exertions of nature—is a most important period for the application of remedial agents, and particularly of that class which operate for the prevention of a return of the

febrile paroxysm. If these are not applied, and successfully applied, during the remission, there will be a renewal of the exacerbation in from one to four hours, and sometimes this will be preceded, as before, by a chill; or at least by chilly sensations, attended by coldness of the extremities, and particularly by coldness of the fingers and toes. This second exacerbation is almost uniformly more severe than the first; and thus the disease goes on increasing in violence from day to day, without observing regular periods of exacerbation and remission; but always passing through both, or one whole routine of fever and remission every twenty-four hours.

When the disease is not of such intensity as to destroy life at an earlier period, a favorable termination may be expected on the fifth or seventh day; but should the disease continue unabated, the daily exacerbations and remissions are apt to return until the fourteenth day, although the life of the patient may be deemed pretty secure after the ninth. Thus it is that all the forms of periodic disease show a tendency to observe septenary periods, and the more so the longer they continue. It often happens that by active and judicious treatment, we obtain for our patient great relief on the third or fifth day; and yet, unless cautiously guarded, he will suffer a considerable exacerbation on the seventh day. And then, again, we may recover our favorable control of the

case on the ninth or eleventh day, and even consider our patient permanently relieved ; when, much to our surprise, we find him again suffering with fever on the fourteenth day. And a similar recurrence of the disease may take place on the twenty-first and on the twenty-eighth days, and so on at intervals of seven days, or of some multiple of seven. These returns of the fever are apt to be considered and treated as relapses, when in fact they are recurrences of an uncured periodic fever, in conformity with an inexorable law of nature ; but it is a law which has as yet received no explanation as to its causation.

This brief description of remittent fever is suited more particularly to the milder forms of the disease. In many parts of the South it is common, at certain seasons, to meet with the disease in a much graver grade, and requiring more prompt and active treatment. This is a grade sometimes called malignant, and it gives no promise of spontaneous recovery. If the life of the patient is saved, it is by treatment. The cold stage, although less marked by the rigors and shiverings of an intermittent, continues for a longer time, and is painful and serious rather by its prolongation than by the degree of coldness, sometimes ending in death without reaction. The pain in the head is often very intense, and the patient complains of a tightness and rigidity above the eyebrows, which he compares to the pressure of a band of iron.

The face is either pale and ghastly, or becomes flushed with a purple or leaden hue, indicating capillary congestion, and imperfect decarbonization of the blood. The skin is either hot and dry, or moist and cool ; the tongue rough and of a purplish color, with the mouth moistened with viscid saliva. The countenance is expressive of anxiety, agitation, and great suffering ; the eyes are often suffused with tears, and the conjunctivæ bloodshot. Pain in the back and limbs is constant, severe and wearisome. Distressing nausea is common, with occasional vomiting of viscid and acrid secretions. The bowels are constipated, but the patient often discharges the watery secretions of the large intestines without relief. The action of the kidneys is defective, and sometimes wholly suspended. Delirium is often superadded to all other distressing symptoms, and this sometimes amounts to maniacal ravings.

This graver kind of paroxysm having been passed, with all its painful concomitants, there comes on a remission, which generally occurs early in the morning, and is of short duration. The most reliable indication of its approach is to be found in the pulse, which becomes less frequent, and fuller. All the more distressing symptoms are, indeed, mitigated in violence, but another paroxysm quickly supervenes, sometimes within an hour ; and unless some relief be secured by treatment, it will prove to be more

painful and distressing than the previous one. The stomach will now be likely to show increased signs of disorder, while the pain and constriction of the head may be lessened. The extremities become cool—sometimes quite cold—to the touch, while the patient complains of heat, and is impatient of warm applications to the surface. There is cutaneous congestion, cold sweating, and comparative insensibility of the skin, and also excessive thirst. Great restlessness exists without acute pain, and wakefulness without mental excitement; and there is evidently much suffering without the ability to designate any particular location of pain.

The remission comes again, and almost invariably in the early morning hours. After turning and tossing during the livelong night, racked with indefinable pains, and tormented by restlessness and inability to sleep; after having been kept half-delirious by fever, and perhaps been constantly vomited and purged by injudicious medication; the patient gains a partial respite from suffering as morning approaches, and exhausted nature finds repose in sleep. There is then at last a remission of the fearful disease. The nurses, exhausted by labor and watching, gladly avail themselves of this opportunity to rest, and at such a critical moment, unfortunately, the physician is likely to be absent or asleep. The period of remission in such a case is always imperfect, and of short duration.

The physician returns to his patient to find him in the midst of another paroxysm ; and this differs from the last mainly in the fact, that it is of still greater violence. The various local lesions with which the disease has become complicated are all the more formidable from the manifest exhaustion of the vital powers of the system.

We must now expect, that death will speedily follow, or that there will be a long and tedious continuance of the fever, under the retroactive influence of the local lesions which have been produced, with occasional periods of partial relief, but with repeated relapses and backsets, ending perhaps in final recovery, but with more or less of chronic congestion and hypertrophy of the viscera, which are troublesome through life. A great variety of names have been applied to the disease taking this prolonged course ; but when death ensues, on or about the fifth day, it has been commonly called malignant fever ; which name Sydenham considered, in his time, to be more destructive to human life than gunpowder. This constantly varying nomenclature is well calculated to lead physicians fatally astray in the treatment ; and it can only be useful as an apology to the public for the loss of patients. My belief is, that the character of the disease has undergone little change since the time of Hippocrates. Names alone have changed. So far as I am capable of judging of these things from

my own observations, it certainly is true that no material change has occurred in the character of this grave form of fever, since I first became familiar with the disease, as it prevails in the South, in the summer and autumn of 1819. I had much to do with it at that time, and have seen many cases every year since, without being able to discover any important changes, except as the disease varies in intensity in different years and cases; nor am I convinced that the indications of cure are different. Like plague, small-pox, measles, etc., this form of fever is a specific disease, governed in its etiology and pathology by fixed and immutable laws. Such it probably ever has been, and such it probably ever will be, whatever may be the names by which it may be called.

LECTURE VII.

REMITTENT FEVER.

AUTHORS agree in the opinion that remittent fever is materially influenced in its character and severity by the season of the year, as well as by the locality in which it prevails; but it is acknowledged to be most common and violent in autumn. For this reason it is not unfrequently denominated autumnal fever, or autumnal bilious fever. It is generally conceded, also, that this form of fever sometimes prevails somewhat extensively both in spring and summer. But writers are apt to take little notice of the fact, that remittent fever prevails also in winter, and sometimes extensively. These cases, however, in general, as I have before remarked, are attributed to the influence of causes originating and acting upon the system in autumn, and are, therefore, still spoken of as autumnal fevers. I am of the opinion, however, as you are all aware, that the cause of periodic fever, whatever may be its source and character, originates and acts upon the system at all seasons; although it is doubtless true, that it prevails in greatest intensity in summer

and autumn ; and, considering all the circumstanees of the ease, I can pereeive no better reason for attributing the fevers which prevail in winter to the eauses originating in autumn, than for assigning the fevers of spring to the causes originating in the winter season. To be sure, there is a hypothesis in regard to eauses, which requires the aid of a higher degree of heat than prevails in winter, but while nothing is settled in regard to the eharacter of this eause, this should have little or no influence with us, especially when we are constantly observing its effects, and such effects as we have every reason to believe follow as closely upon the action of the eause in winter as at any other time, the predisposition of the patient being the same.

But it is by no means uniformly true, that remittents assume their most violent grade in the autumn season. Occasionally it happens that autumnal fevers are very mild and tractable. Of late years, particu-larly, there have been epidemie remittents in the South of this mild grade, proceeding to a favorable termination in three to seven days, and attended by no other inconvenience, scarcely, than what arises from the troublesome pains whieh attend upon all fevers ; yielding to the mildest remedial measures, and sometimes coming to a favorable termination even without medication of any kind. It may, therefore, be received as true, that the remittents of autumn are

not only, in general, of a more violent grade than those prevailing at other seasons of the year, but that they are also, sometimes, milder and more tractable than any other.

Now, as the different seasons give rise to remittents of different degrees of severity, so are they marked also with a tendency to different local lesions. In autumn the prominent local lesions are those of the liver and stomach, notwithstanding that the derangements of the early stage appear to be mostly of the brain and nervous system. During the forming stage of the disease, and all the first well-developed paroxysm, the patient suffers with pain in the head and eyes, extending also through the spinal column and the limbs; and it is upon the partial subsidence of these, when the vascular and secerent systems become involved in the diseased action, that gastric symptoms become distressing, the hepatic function disordered, and the secretions increased or diminished, according to the degree of febrile excitement. All the abdominal viscera suffer more or less derangement, dependent probably upon the irritation and congestion existing in the several organs. And this form of attack is more illustrative than any other of the principle so ably advocated by some modern writers, that fever affects first the nervous and secondarily the vascular system.

The local lesions caused by autumnal fever, then, are mostly abdominal; but the lungs are peculiarly

subject to engorgements in all the various forms of periodie fever, and especially in the eold stage. But while, like the eerebral derangements, these thoraeie engorgements give way in the autumn to the more distinete lesions in the abdominal viseera, in the winter, when the air is eold and the weather variable, when the pulmonie sympathies with cold extremities and suppressed perspiration prevail, these primary congestions are apt to beeome persistent, and the prominent local lesions are, therefore, within the thorax. The fevers of spring partake more or less of the eharaeteristics appertaining to those of winter, according to the peculiarieties of the weather, and the nature of the epidemie influenees that may be prevailing. But as the heats of summer become more constant, the pulmonary irritations are lessened in their severity, and although still observed in the ehill, and inceptive stages, they give way again to more potent influenees, and we have the predominance of the abdominal lesions, as in autumnal fever.

But whatever may be the seat of the prominent local lesions, unless the disease be promptly subdued, serious congestions and irritations of the mucous tissues will ensue, causing prostration of nervous energy, and tending toward a prolongation of fever, which may beeome in time wholly symptomatic of these secondary affections. The term typhoid, as now used, is, I believe, principally applied in this country to desig-

nate these protracted cases of remittent fever ; and I have serious doubts whether, after all that has been said about typhoid fever as prevailing and increasing among us, there is any other form than this which, whatever else may be said of it, is certainly not new. To my certain knowledge it has prevailed just in its present form for full forty years. Names have changed, as I told you yesterday, but the fever has not changed. The disease, in this stage, is now called typhoid fever, or typhoid pneumonia, according to the locality of the local lesions. The adjective selected I consider to be an unfortunate one, because, like the term debility, which has caused the death of millions, it leads to the adoption of excitant treatment prematurely, and sometimes even while the periodic nature of the disease requires active efforts for its relief. But I shall have more to say upon this subject when I come to treat of enteric fever.

The morbid appearances after death in remittent resemble those in intermittent fever. Structural derangements exist in the highest degree, of course, in those organs and tissues which have been the seat of the most serious local affections ; and yet it has been found, as is stated by some authors, that fatal, and therefore severe, cases of remittent fever have occurred, which show no signs, upon *post-mortem* examination, of any considerable local lesions, which could by any means account for the death of the patient. Even

cases of death preceded by strong indications of cerebral affection, have presented a sound and healthy state of the brain and its membranes. In other cases, physicians have been surprised to find the abdominal or thoracic viscera equally exempt from morbid appearances. And it often happens, that when the bodies of such persons have been brought upon the dissecting-table for anatomical instruction, no one is able to discover what was the cause of death. It was my custom for many years to make *post-mortem* examinations of such cases whenever permission could be obtained to do so; and it has seemed to me very extraordinary, after carefully watching the course of the disease, to find the organs most seriously implicated showing no commensurate appearances of disease. This is a striking commentary upon the now popular French doctrine, which teaches that fever is always symptomatic of some local affection. And it seems to me to afford strong support to that other less popular but more reasonable doctrine, which considers fever an idiopathic and constitutional disease, except when caused by some clearly defined local affection previously existing.

In gastric or gastro-enteric fever, the stomach and some portions of the intestinal canal exhibit signs of inflammation, but more commonly of congestion in the larger blood-vessels, and sometimes there is a thickening or ulceration of the mucous coat. But in

fatal cases of gastritis, whether proceeding from fever or other cause, I have often been surprised to find such small signs of inflammation in the coats of the stomach. Frequently a slight thickening of small portions near the pyloric orifice only appear, with slight redness and turgescence. In some cases of evident hepatic disorder, the liver, and often the spleen also, are found to be enlarged by reason of vascular engorgements, and sometimes both organs exhibit signs of inflammation. The capillaries of the brain, the spinal marrow, and especially of their investing membranes, are sometimes found congested, in cases which have shown strong symptoms of cerebral disorder; but I apprehend that a majority of cases of cerebral derangement in fever, are of an irritative and not an inflammatory character. Many times, cases of fever with great vascular excitement are called inflammatory fever; and yet there is, after death, in most cases, no evidence to be found of the preexisting inflammation, and sometimes no sign of it can be found in any particular organ.

These are remarkable discrepancies; and when we consider the fact, that the disease always gives evidence of a general, constitutional derangement, affecting, at the same time and almost equally, every portion of the body, they afford us strong reasons for believing that fever, at least in its early stages, is essentially a nervous disease, affecting especially the

ganglionic system of nerves, which is supposed to preside over involuntary motion, including, of course, circulation, respiration, nutrition, and digestion. These vital functions may become so disordered by nervous influences, as to cause death without any appreciable change in the structure of any organs of the body; and the violent derangement which the involuntary functions receive immediately upon the accession of the febrile paroxysm, would seem to be sufficient evidence of nervous agency. If it can thus be shown that the primary action of the febrile poison be upon the nerves which govern involuntary motion, and that the subsequent vascular excitement is caused by this disturbed action of these nerves, producing local lesions or not, according to the length of time the disease continues, and the susceptibility of particular viscera, we cannot be far from the truth in declaring fever to be, especially in its early stages, a purely nervous disease; and this view will receive confirmation also, as you will perceive when I come to speak of the treatment of fever, in the action of remedies. In a former lecture I stated the fact, that this theory of fever was long ago advocated by distinguished men, and it is quite unaccountable how their successors could have ever lost sight of it. It can only be attributed to the prevailing rage for innovation, and to the ambition of authors and teachers to acquire distinction by originating new theories to

bear the names of the inventors. In the history of mankind, this ambition of distinguished physicians has only been equalled by that of pretended religionists, to become the promulgators of novelties in the Christian system. But there is this difference in the two subjects: medical knowledge is progressive and improvable, but the religious system was promulgated in a perfect form, and all innovations must, of course, be false.

The remedies employed in the treatment of remittent fever are many and various, and the different methods of using them are quite as many and various; making it quite difficult for a young physician to determine the proper means to be employed for the accomplishment of particular results. But there has been a tendency, of late years, to simplify prescriptions in the treatment of all diseases, leading to the use of single, unecombined remedies, and dispensing with many adjuvant articles in our very redundant *materia medica*. In the treatment of fever especially, the number and variety actually used by some physicians of large experience is surprisingly small, and the doses of each are, in general, also small. These facts are well worthy of your consideration; for in few other things are young physicians more likely to err. As the style of young writers abounds in expletives and superlatives, so the practice of young physicians is characterized by heroic doses and adjuvants.

The first remedy I shall speak of in this connection is—

Bloodletting.—Many disputes have arisen as to the indications for its use in fever, and some have even condemned it altogether; although all agree that it exercises a powerful influence over vascular derangements, which are ever present and leading characteristics of fever. On account of a popular prejudice which prevails to some extent against the loss of blood, and the trouble of performing the operation, physicians are no doubt sometimes willing to dispense with bloodletting, when they feel assured that it would prove useful. But during the prevalence of fevers of a high grade, we can never foresee in the early stage to what extent of severity the disease may go; and it is our duty in all cases to adopt the most certain means of relief. The remittent is a more grave and serious type of fever than the intermittent, and subject to more violent and dangerous local lesions; we might therefore expect that it will require, particularly in southern latitudes, more active depletory measures. If it be no uncommon thing, therefore, as I have stated in a former lecture, to derive benefit from the use of bloodletting in intermittents, much greater benefit may be expected to result from it in remittents; and we find in most parts of the country, and by most physicians who use this remedy at all, that it is resorted to much more frequently in the lat-

ter than in the former type. It may be considered a more important remedy in the South than in the North, and, according to all my observations, it is not less easily borne, or a less efficient remedy in cases of Southern than in those of Northern men ; although the latter are more likely to require its application, because the disease is apt to attack them with greater violence. It doubtless is true, however, in regard to classes of mankind, that persons of Southern birth, and negroes, do not require the loss of so much blood as white persons of Northern birth and habits. But under the same conditions of the system, the remedy is of equal importance to all.

Whenever the first distinct paroxysm is at all violent, and attended by a concentration of morbid action upon some vital organ, threatening with serious lesion the brain, stomach, liver, or lungs ; and particularly when the chilly sensation with which the paroxysm begins becomes protracted into the hot stage, which may always be considered evidence of serious internal congestions, bloodletting is not only a useful but an important remedy ; and not unfrequently it is essential to the preservation of life. Even when not so important as this, its employment in the early stage often affords us an advantage over the disease, which can with equal certainty be obtained in no other way. It not only equalizes the circulation of the blood, and subdues vascular excitement, but guards the vital or-

gans against those serious and sometimes lasting local congestions which, if they do not destroy life, prevent a perfect cure of the disease. In the more violent cases, it is often advantageous to resort to blood-letting a second and even a third time, and particularly in plethoric subjects threatened with serious local congestions and inflammations. General blood-letting has many advantages in the early stage of fever over local, and it is best performed by opening a vein in the arm. It is comparatively of little use to apply cups and leeches to the head, stomach or chest, when the symptoms indicate the existence of a state of great general excitement; but when this has been in some degree relieved by bloodletting, and other remedies, and the local affection still continues to an inconvenient extent, then topical bleeding may be resorted to with great good effect. And this good effect will not in such case be wholly confined to the local affection; but it will readily be perceived that its tendency is, to reduce the force and frequency of the pulse, and by consequence the febrile excitement. When cups or leeches are used, they should generally be applied in the neighborhood of the local affection; but sometimes the effect is very striking when they are applied to the spine, over that portion whence the nerves issue which are distributed to the diseased organs.

In the treatment of remittent fevers of a grave

character, it is an object to make a favorable impression in the early stage, by which the disease is converted into a comparatively mild grade; and there is no remedy more effective for this purpose than blood-letting. Unless such impression be made, each successive paroxysm renders the disease more serious. The remissions become less distinct, and of shorter duration, the exacerbations less marked and decided, and the febrile excitement less prominently developed. It is at this stage, and under these circumstances, that the disease is apt to take the name of congestive fever. The pulse is neither so full nor so frequent as before, and the skin is frequently moist and cool. There may be pain in the head still, but without the red cheek and the blood-shot eye. These have given place to a dull and purplish color, indicative of a sluggish, capillary circulation. A dull, heavy, restless feeling succeeds acute pain, and the secretions of the liver and kidneys are lessened or suspended. Thus a disease which the physician would in the early stages have pronounced inflammatory fever, becomes by degrees congestive; and, finally, according to modern ideas, typhoid. The difficulties in the way of a speedy cure are greatly increased by these progressive changes, against which the patient can only be protected with any degree of certainty, by a pretty free use of bloodletting in anticipation of them.

Tartar emetic is the agent next in importance in

the work of reducing the force of exuberant excitement. In a large majority of cases the physician is called in during the exacerbation of fever, and his first object is to secure an early remission, that he may be able to apply antiperiodic remedies. By the proper use of bloodletting and tartar emetic he is not only enabled to do this, but he will also guard his patient against those local lesions which have to be obviated to insure recovery. Like bloodletting, tartar emetic is directly sedative, acting upon the vascular, through the medium of the nervous system. The excitement of the capillary circulation is so far reduced by the influence of these sedative remedies under judicious management, as to facilitate the passage of the blood through the proper channels, and thus prevent those engorgements and hypertrophies which become troublesome causes of prolonged febrile action, and equally troublesome sequelæ of the disease. While the action of tartar emetic is somewhat less prompt and less agreeable than bloodletting, it is, by its frequent repetition, and persistent influence, in many cases, the more efficacious remedy of the two. In many cases, however, the physician finds it advantageous to resort to both, the tartar emetic serving to perpetuate the sedative influence caused by the loss of blood.

Physicians are not fully agreed as to the best method of administering this remedy, and particularly as

to the necessity of giving it to the extent of causing nausea, to secure the benefit of its sedative power. But my own observations lead me to believe that it is sedative in its effects under all circumstances, and to the extent that it produces any effect whatever. If given in doses insufficient to produce nausea, the sedation may not be very apparent ; but when given in doses decidedly nauseating, and repeated to keep up the nausea for any considerable time, the sedative effect becomes very decided. We have then the double advantage of the directly sedative operation of the remedy, and the sedative effect of the nausea ; for it is well known the medicines which produce nausea are sedative by reason of the nausea, although there are many nauseant remedies which do not act as direct sedatives. In treating an active exacerbation of fever, therefore, I recommend that tartar emetic be used to the extent of producing and sustaining a considerable degree of nausea.

The plan of administration which I have considered best is the same that I have recommended in my lectures to you, for many other active medicines, namely, to begin with small doses, and to increase the quantity as the patient is found to tolerate or require it. But in deciding upon the use of tartar emetic, and upon the proper dose in any particular case of fever, we must always consider the extent to which the stomach is involved by the local determinations of the

disease. Should hyperæmia of the mucous membrane of this organ exist, attended by nausea and vomiting, and by tenderness at the epigastrium, as in gastric fever, it may be injudicious to give tartar emetic at all ; and it must, in cases exhibiting any of these symptoms, be given, if given at all, very cautiously and sparingly. This is one great disadvantage in the treatment of gastric fevers, and it obliges us to rely more upon depletive and refrigerant remedies. I consider it proper, therefore, to use both general and topical bloodletting more freely in all those cases of fever which threaten at an early stage particular gastric complications ; and especially when such form of fever is epidemic. One or more free bleedings from the arm in the first stages, and the application of cups or leeches to the epigastrium at a later period, are found to be the most effectual antidotes to nausea and vomiting.

The difficulties in the way of using tartar emetic in the gastric form of remittent fever, which is in general the most violent and fatal of all the forms of fever, renders it very desirable that some substitute sedative of equal power should be discovered. The veratrum viride has lately been highly recommended, and it appears to have remarkable sedative power, but I fear it will be found to be too irritating to promise good results in cases of gastric inflammation. In a case in which I have seen it used lately, the patient

compared its effects to those of molten lead, and the dose was not repeated. It has been suggested that the hydrocyanic acid, or some of its compounds, or the sulphuretted or carburetted hydrogen, may be brought into common use as sedative agents. The carbonic acid gas is now used to some extent; and its value and reputation would be increased, I suspect, if it were more commonly used without loading and embarrassing the stomach with undue quantities of fluid, as is too often done.

Upon these two measures, therefore, bloodletting and the exhibition of tartar emetic, you may place your main dependence in the treatment of an exacerbation of remittent fever; but substituting some other sedative for the antimony, when there are serious gastric lesions. With the exception of counter-irritants, with a view to equalize excitement, and refrigerants to reduce the preternatural heat, little else need be done in the way of treatment until the period of remission. The various forms of bathing which I have heretofore described to you, are valuable remedies; but I doubt whether any other means of refrigeration is equal to that of the cold water enema. I have seen patients submitted to the influence of the external application of ice and iced water, bathed with cold or warm water from head to foot, plied for hours with cold acidulated and effervescing drinks, and treated in every conceivable way for refrigerant effect

for hours together, without one half the relief and comfort to be derived from a single pint of cold water injected into the rectum.

The sinapism is, perhaps, the most valuable counter-irritant, but in a state of high febrile excitement it should only be used to equalize the circulation. At a period when this excitement has been partially subdued, and the patient is suffering from serious local congestions, mustard applied to the surface extensively and repeatedly becomes a most important and powerful remedy. Blisters are also valuable under similar circumstances, and in some cases these possess an advantage in the discharge of serum ; but mistakes may be made in applying them during the excitement of fever, over some organ suffering from active inflammation, by which this evil is increased. Vesication by the use of hot water, sometimes resorted to in fever and cholera, is liable to the same objection. Indeed, this application, as I have known it used, appears to be a refinement of cruelty in practice, at which human sympathy revolts. And the same may be said of the use of the red-hot iron drawn along the spinal column, when the effect sought to be produced could more certainly be attained by other less cruel and repulsive means. It is a sad mistake sometimes made to adopt, in a fit of despair, the most cruel tortures for a dying patient, in the hope of securing some kind of equivocal *éclat* from bystand-

ers. Every well-meaning physician feels the duty incumbent upon him to so prepare himself by previous study and reflection, as to be able to meet the great emergencies of practice in the spirit of the philosopher and the Christian. This is one of the high responsibilities of our noble profession.

LECTURE VIII.

REMITTENT FEVER.

In my last lecture I remarked upon the febrile exacerbation, or stage of excitement, and spoke of some of the remedies employed with a view to moderate its force, shorten the period of its continuance, and prevent the establishment of local lesions as one of its consequences. The next object of attention is to watch with all vigilance for the period of remission. And there is no danger of disappointment; for, if the patient do not die in the paroxysm, a remission is certain to follow in the course of twenty-four hours from the commencement of the paroxysm. Sometimes it occurs at one hour, and sometimes at another, but in cases of greatest violence and danger, it generally happens early in the morning. Relief of suffering is obtained, as I have before remarked to you, at the dawn of day, or even a little earlier, when the patient and nurses are apt to be asleep, and the physician absent.

Paroxysms of remittent fever generally come on early in the day. In the more violent grades, the

period of nervous depression is of short continuance, the exacerbation quickly follows, and it increases in severity during all the day. After night, there is oftentimes an abatement of suffering, with a reduction in the force but not in the frequency of the pulse. Some time between three and six o'clock in the morning, the careful observer will perceive that the pulse is becoming somewhat less frequent also; and this will be the first absolute sign of the approaching remission. It will very soon be followed by an abatement of heat, pain, nausea, and restlessness, and after a while by imperfect and disturbed sleep. After the patient has been annoyed by treatment and tortured by pain, restlessness, and wakefulness, until well-nigh exhausted, no one will seem to doubt, that a little rest is now, of all things, just what the patient most requires. The class of remedial agents hitherto employed, are now no longer applicable to the case, and all active treatment is likely to cease, at the very moment when it is most important and valuable.

At the risk of a little tedious repetition, you must permit me to urge this point upon your attention. I have lived for many years in the midst of this destructive disease, and I have seen it day by day, and year by year, sending my fellow-beings down, prematurely, to the silent tomb. I have known hundreds to die from the milder, and hundreds to recover from the severer grades; but upon no one point or condi-

tion have so many of the cases turned, whether for the better or for the worse, as upon this which I am now considering—the attention or neglect of the patient at this critical period of time, early in the morning. If, therefore, you are to engage in the practice of your profession with the honesty of purpose which characterizes the actions of good men, I must solemnly warn you, that whenever it falls to your lot to be called upon to treat cases of remittent fever of a violent grade, you can hardly expect to discharge your duties properly, without carefully preparing for this contingency, or without standing by the bedside of your suffering patient while the day is dawning.

The period of remission in such cases comes on rather suddenly, and it is short and delusive. It is, therefore, always difficult to adopt such precautions as will certainly secure the proper attention. Very often you will find it of little avail to prescribe active remedial measures to be used at a time when, after long suffering, the patient is partially relieved and enabled to enjoy rest and sleep. Nurses will administer remedies freely while the patient is undergoing severe suffering, but when he is relieved of this, few of them can be persuaded that it is the proper time for active treatment, and thus life is often sacrificed to inattention and neglect.

The treatment to be adopted in this remission of fever is now very different from that of many years

ago, when I first entered upon the practice of our profession. It is at once more simple, effective, and intelligible. The system, reacting in a violent manner from a state of morbid depression, has been sorely exercised by nervous and vascular excitement, impairing and shattering all the normal energies, now arrives at a period of comparative rest. This is not to be considered a subsidence of disease, but only a temporary exhaustion of excitability, a state of recuperation, preparatory to another morbid effort to rid the body of the mysterious and unknown causes of such frightful disturbance. Nature, after all great and preternatural exertions, is apt to seek temporary repose, and in this instance that repose invites the interposition of such remedial measures as will prevent a succeeding and more dangerous paroxysm. Until the discovery of quinia and the antiperiodic power of arsenic, no certain means of doing this were known to the profession; and these fevers ran their course to a favorable or an unfavorable termination, with very little treatment that could be considered decidedly curative in its character, and none that was antidotal to the mysterious principle of periodicity. Cinchona had been made available in this respect in the treatment of intermittents, which afforded a respite sufficiently long in their intermissions to enable the physician to bring the patient under its peculiar influence; and thus this form of fever was arrested and cured by

it. But the remittent type did not, in general, afford time for the accomplishment of this object, and the stomach, in most cases, being in an irritable condition, could not be made to retain and digest a sufficient quantity in the one, two, or three hours during which an abatement of febrile excitement existed, to prevent its return. In many cases, the attempts which were made to accomplish this object, by the exhibition of bark in substance, resulted in a distressing increase of gastric disturbance, and an unfortunate exhaustion of vital power.

Now, what the discovery of cinchona was to intermittents, the discovery of quinia is to remittents. What was done by the former in a whole day, may be done by the latter in a single hour, giving us all the advantage of effective treatment, if promptly and judiciously applied, in the case of a short remission, that we had in the former case in a long intermission. It was not often deemed necessary, in the apyrexia of intermittents, to subject the system to that full sedative power of bark which has been called cinchonism, and many physicians, I suppose, had never witnessed it; but in the more urgent case of remittent fever, as now treated, the sedative power of bark and its salts is often observed. Indeed, there is no certainty of immediate relief without it, especially in the more violent forms of the disease. This, then, is what you are expected to accomplish for your patient during

the first remission that occurs after you take the case in charge, however short and imperfect that remission may be. For this purpose I have advised you to be found standing at his bedside at the critical hour, to determine, from the signs of abatement in the febrile action, and especially from the reduction in the force and frequency of the pulse, that the remission is at hand. It is not necessary to wait until the remission is full and complete, for in both the intermittent and remittent types, quinia in full doses hastens on the period of apyrexia, if given upon the first appearance of abatement in the febrile action, just as certainly as it increases it while the exacerbation is cumulating. This distinction is important, while urging on the treatment.

There is much difference of opinion in regard to the proper quantity of quinia to be given in such cases, and frequently it is quite difficult to determine this, some persons undoubtedly requiring more than others under similar conditions. What you have to consider is, that your success, and sometimes the life of your patient, depend upon the establishment of a state of cinchonism ; and upon your maintaining it until all danger of a return of the paroxysm is over. I have rarely given more than ten grains for the first dose, but when the effect is not decided, I have generally followed it by five more, and sometimes by ten, in the course of an hour. When the disease is so vio-

lent as to give reason to apprehend a fatal issue, it becomes a matter of such great importance to quininize the patient promptly, that it is always better to take the risk of too much than too little; for in many cases life turns upon the question of another paroxysm. Several considerations must be constantly borne in mind, however, in the administration of quinia in this disease. 1. It is stimulating and injurious while febrile action continues, unless given in quantity sufficient to secure a constitutional sedation. 2. When given in such quantity, and this effect secured, the sedation may be sustained by much smaller doses than were required to produce it. 3. It is generally necessary to keep up and sustain this sedative action of the quinia for some two or three hours beyond the usual period for the return of the paroxysm. 4. The quinia treatment must be repeated just before the next, and indeed, before several successive paroxysmal periods, to protect the patient against a recurrence; but the quantity used for this purpose may be lessened from day to day. In violent cases, or during the prevalence of an epidemic, it is sometimes advisable to continue this precautionary treatment until after the seventh day, the first septan period, when there is generally a disposition to a repetition of the paroxysm. This is mainly the course to be pursued in the use of quinia; but it is proper to remark, that each and every dose may be rendered more efficient, and

the size of it may, indeed, be reduced, by the simultaneous use of the arsenous acid in substance. And when, by some idiosyncrasy, the patient cannot take quinia without painful effects, the arsenic may be substituted for it, with scarcely less beneficial results. The dose may be varied, according to circumstances, from one tenth to one fifth of a grain, and repeated as quinia is repeated.

It happens, not unfrequently, that in the most violent cases of remittent fever, and especially those complicated with gastric lesion, the stomach will not retain the quinia in sufficient quantity to produce its constitutional effects, and that nausea and vomiting follow every repetition of the dose. When this is the case, the quinia should be given by enema. Commonly, it requires about three times the quantity that would be required if taken into the stomach. The medicine should be reduced to a fine powder in a mortar, and then mixed in thin starch. Sometimes five or ten drops of laudanum are added, the better to insure its retention; but in most cases of this kind in which there is much gastric excitement, opiates are contraindicated, and it is better to avoid, if possible, even this small quantity. If the crystals of the salt are reduced to an impalpable powder, the enema can generally be secured in its position by pressure upon the anus, until the inclination to discharge it passes away. Should the experiment fail, it should prompt-

ly be repeated, and repeated several times. It is rarely ever all discharged, and the portions retained after several repetitions will generally prove sufficient. Quininization being fully effected, the gastric disturbance is generally allayed by it, and then the remedy may be administered in the usual way. The quantity used must be determined by the effects produced; and a physician who has been much in the habit of observing the operation of quinia, can hardly fail to discover whether the proper amount has been retained. But it should always be remembered that much smaller doses are required to sustain than to produce the necessary constitutional influences.

Although I do not agree in opinion with those who believe, as was formerly believed by many of the bark in substance, that the use of quinia is productive of serious and permanent injury to the constitution in most cases, still I must advise you, that this and all other medicines acting specifically upon the nervous system may be used so injudiciously, and in such excessive quantities, as to produce the most melancholy results. No article of the *materia medica* is powerful for good, that cannot become powerful for evil also; and we have no remedy in use of such active poisonous qualities that cannot be made harmless by judicious management. Take strychnia as an example. In doses of a single grain it becomes dangerous to life, but in the proper quantity for remedial purposes, it becomes

both mild and agreeable in its operation. The sedation which quinia produces appears to be specially operative upon the brain, as evidenced by ringing in the ears and partial deafness. Carried only a little further and its influence maintained, the eyes become affected, and instances are not wanting in which the senses of hearing and seeing have been destroyed by it. Partial paralysis of some of the limbs has also sometimes been produced, and even mental imbecility. You will not, therefore, be justified in the conclusion, because, in a vast majority of cases no harm results from the use of quinia, that it cannot be abused, so as to cause serious and permanent mischief.

I would not have you to infer that the course of treatment which I have now described is as easy of execution as it is simple in description; and that because little medication is advised, little skill is required. On the contrary, no one can expect to be successful in the application of this practice, except he be well skilled in diagnosis and therapeutics. The power of quinia over periodicity, especially when aided by arsenic, is so supreme that all cases may possibly be within its absolute control; but if great discrimination, care, and skill be not exercised during all the paroxysm and remission, such local lesions will be formed, probably in the shape of congestions in some of the viscera and vital organs, as cannot readily be remedied. The fever is gone, perhaps, only to make

the evidences of its existence felt in some less tangible form. Glandular obstructions are formed which are not easily removed. Diseased hypertrophy has seized upon certain important organs, seriously deranging their proper functions. Inflammation of an obscure and chronic character has insidiously seized upon deep-seated and hidden tissues ; and instead of a case of simple fever affecting the system generally, the proper treatment of which is comparatively obvious, you have to contend with a complication of diseases, causing prolonged febrile action by their irritating influences, the precise character of which it is difficult to comprehend, and the successful treatment of which is often beyond your power.

Formerly, and before we had it in our power by any means then known to arrest the disease in its early stages, a succession of daily cathartics was required ; not so much to relieve the bowels of ingesta or for purposes of depletion, as to purge off the excretions which are constantly poured into the intestinal canal by the exhalents and glandular structures, and which become sources of much irritation and annoyance, and unless promptly removed will certainly lead to dangerous and distressing symptoms. The embarrassment occasioned by these accumulations in the intestinal canal is pretty much in proportion to the repetitions of the paroxysms, and their duration and intensity ; and a similar relation exists

between these accidents of the disease, and the local lesions which result from it. Neither of these difficulties are supposed to occur to much extent during the remissions. They are caused by febrile excitement, and therefore the recurrence of the paroxysm, as well as its severity and duration, is sedulously to be guarded against. If the first severe paroxysm can be greatly mitigated in its force by treatment, and if its return can be prevented, we have reason to hope that these intestinal accumulations are only to a very moderate extent; and that the local lesions caused by fever are not numerous, or of a grave character. The action of antiperiodic remedies is favorable to healthy secretion, and to the peristaltic movement, by relieving the system of febrile tension; and by these means alone are the bowels frequently relieved of morbid matter, and local congestion and inflammation overcome or prevented.

But whenever it happens, for want of skilful treatment, that our patient has passed through several exacerbations and remissions, we shall be apt to find that the evils alluded to are much increased. There are more intestinal accumulations, and greater and more extensive local lesions. From the irritation produced by these, the fever has become to some extent symptomatic. Cathartics in this case are quite as essential as antiperiodics; and both classes of remedies must be used with due regard to the new

complications now existing. These will be such, in all probability, as to require also the use of alterative remedies ; and in the employment of these great care must be exercised as to both the time and the manner. If we attempt by these means to relieve local congestion or inflammation, while the whole system is in a state of vigorous febrile excitement, tending not only to confirm the diseased condition which we propose to remedy, but to produce similar morbid effects in other organs not yet seriously implicated, we can hardly expect our remedies to succeed. The class of remedies apt to be preferred is that called alteratives, nearly all of which are pretty active excitants, and we have no good reason to expect that an excitant of any kind will work out its good effects to the extent expected, while the morbid condition pervading the whole system, as well as the diseased organs requiring special relief, is already suffering from undue excitement. The choice of such time for the exhibition of alteratives is injudicious, and does not promise favorable results ; and the attempt to use them may be likened to that of an effort to relieve coloryza by stimulating sternutatories.

When we find disease prevailing in the animal economy, and are called upon to apply the proper remedies, our first object should be to ascertain and remove its cause. The febrile action is the cause of the condition we are now contemplating, and

this being first removed, our second object is the removal of the diseased conditions which the fever has produced. The proper time, then, for the successful application of alterative remedies in such case is after the fever has been subdued; and you may rely on it, that he who attempts the object in view, without an observance of this rule of practice, will do his work under great disadvantages, if he do not entirely fail.

It is conceded by physicians generally, that the visceral disorders resulting from fever are best relieved, in a large majority of cases, by the use of mercurial remedies. These possess alterative powers to an eminent degree, and they are made especially valuable in the treatment of these local lesions resulting from fever, which are supposed to consist mainly of hyperæmia of the capillary vessels, causing hypertrophy and functional derangement of the diseased organs. But unfortunately the members of our profession are not so well agreed as to the peculiar method in which mercury should be applied for this purpose. In determining this matter several things are to be considered. If a cathartic effect be the object, either during the continuance of the fever or after it has been subdued, calomel may be given in scruplc doses; but whenever the indications require an alterative effect, much smaller doses may be used. I have long been in the habit of using calomel in pills of one grain

each, one of which may be given three or four times a day. Sometimes I have given two grains at a dose, and quite as often only half a grain. But whether given in large or small doses, I rarely ever, contrary to the usual custom, combine it with opium ; nor do I allow opiates in any form to be administered, except in cases of great irritation, while my patient is under the operation of calomel.

In this practice I am, perhaps, a little singular ; but it has always appeared to me that there is an inconsistency in the combination of calomel and opium in these cases. The principal benefit to be derived from calomel as an alterative is, that it tends to the restoration of the impaired or suspended secretions ; while the action of opium, as all experience shows, is directly the reverse ; so that the one remedy is all the while counteracting the proper effects of the other. It seems unaccountable, therefore, that the disposition among physicians is so prevalent to unite the two remedies in the treatment of fever. In the early or irritative stage of fever, opium is no doubt a valuable remedy, and in the present state of our knowledge can only be replaced by chloroform, but in this stage little use can be made of calomel, except as a mere cathartic. But when this stage of irritation is passed, and the indications are to relieve hyperæmia, and restore secretion, calomel is our best remedy, and almost our sole dependence, while opium, as I have before remarked, is contraindicated.

The evils of mercurial salivation are also to be considered in this connection. This the physician must always consider a serious misfortune, as the mischief resulting is often incalculable. It is almost invariably caused by the use of opium in connection with mercury, thus lessening the influence of the latter upon the organs of secretion, and concentrating its action upon the gums and salivary glands. In almost any condition of the system, large quantities of mercury may be given without danger of salivation, if opium be entirely withheld.

In many cases of glandular obstruction and disordered function following fever, topical bloodletting is of great value. But when we look upon our patient as cured, or nearly so, because febrile action has disappeared, we are apt to feel reluctant to resort to the use of a remedy which custom has mostly confined to the early stages of the disease, and with some indeed has banished altogether. Should the symptoms, however, indicate the existence of congestion or inflammation in any of the viscera, threatening hypertrophy or disorganization, there is scarcely any case or condition which more unequivocally requires the application of cups and leeches. Next to these the exhibition of tartar emetic is most effective; and not unfrequently, the local excitement being subdued, iodine becomes a valuable substitute for mercury as an alterative.

I ought not to omit, in conclusion, to mention that sometimes there is a hemorrhagic tendency in all the forms of periodic fever, and more commonly in the remittent type. In some seasons and localities it occurs more frequently than in others, depending perhaps upon epidemic influence. When it appears in yellow fever, and the stomach becomes a seat of hemorrhagic discharge, it is black vomit. Physicians sometimes consider it a critical and beneficial discharge, and in many cases I have no doubt it is so; but unfortunately it is not always subject to remedial agents, and proves fatal in consequence of the quantity of blood discharged. In my opinion, there are good reasons for believing that such hemorrhages are efforts of nature to relieve a sthenic condition of the system; thus pointing out to us the error we have committed in withholding the use of the lancet in the earlier stages of the disease. This view is sustained by the fact that such hemorrhages rarely ever follow a course of active depletion by general blood-letting, in such early stages. And they may indicate to us, also, that bloodletting may be successfully employed in the more advanced stages of the disease, when physicians rarely think of resorting to it, provided we are wise enough to imitate nature in the gradual abstraction of blood. I have on several occasions ventured to make this experiment, and drawn blood from the arm in small quantities, frequently repeated, when it was evident that hemorrhage was im-

pending, and with good results. Several bleedings in such cases may be obtained from the same orifice, which keeps open much longer than in the more active stage of the fever, and it is sometimes practicable to draw the blood very slowly, in a stilllicidous manner, in imitation of the operations of nature. Should these operations be anticipated in time, and without causing undue prostration, the threatened hemorrhage may be prevented. Two objects are gained by this practice, namely, the relief of vascular turgescence at an earlier period than by the spontaneous hemorrhage, and the control we secure over the discharge of blood ; but it must be borne in mind that this practice must be regulated by great care and delicacy, lest the patient may sink under the operation.

It is often difficult to regulate the discharge of blood in these hemorrhages, to prevent exhaustion and fatal effects. This is generally attempted by the use of astringents of various kinds, both internally and topically, but I have generally found turpentine to be the most valuable internal remedy. When the bleeding occurs from parts of the body which are accessible to the application of topical remedies, sugar of lead and tannin, one or both, are generally relied upon ; but the most efficient styptic I have used is, a combination of tannic acid and elixir of vitriol. This is a remedy of no mean power for internal administration also.

LECTURE IX.

Y E L L O W F E V E R .

HAVING now given you some account of fever in general, and of various forms or types of periodic fever, it remains to make some remarks upon certain peculiar forms of febrile disease, which have been considered distinctive, in both causation and pathology. One of these forms is yellow fever—the most extended, long-continued, and fatal of all the epidemic diseases which have afflicted mankind; thus affording abundant opportunities for investigating its character. But, notwithstanding all this, there are few diseases about which there exists a greater variety of opinions, and a greater discrepancy of views. It cannot yet be considered a settled matter, whether it is a disease *sui generis*, or merely a variety of periodic fever. The preponderance of opinion has sometimes seemed to be on one side of the question, and sometimes on the other; but at the present time, probably, the affirmative has the larger number of advocates; although it is known that this cannot be distinguished from other forms of fever in its earlier stages.

The disputes on this subject are virtually the same that have prevailed in regard to fevers in general; and it would be both curious and instructive, could we spare the time, to go into an examination, in this connection, of these strange discrepancies in medical opinion. I shall take occasion to refer to only a few of them. Copland says, fever is but one disease; Payne, that the cause of fever, as of inflammation, is essentially the same. Southwood Smith says, there is but one continued fever; but Jenner recognizes four. We find in fever, says Holland, a bond by which to associate numerous forms of disease; a knot so intricate that it cannot be unravelled. Bartlett knows of only the following distinct forms of fever, namely, typhoid, typhus, periodical, congestive, yellow. Fenner reports sixteen nominal varieties, all which, however, he considers only varieties of one general disease. Bryson says, the fevers of Africa are only divisible into two kinds, remittent and intermittent. Other names employed he considers without distinct meaning; as jungle, mixed, and coast fever. The adjectives ardent, yellow, congestive, and inflammatory, he applies to one and the same disease, and says, the synochial is converted into the remittent, and terminates in the intermittent; the mild ephemeral is suddenly followed by high vascular excitement, and finally becomes typhoid. Landor believes, there is but one fever poison, arising from some general, but

as yet unknown, cause. A prominent writer in an English journal thinks, there is but one virus, producing all the forms and grades of fever, the graver forms being contagious. Dickson strangely contends, that each and every type of fever is the result of a distinct and definite cause; and that several of these causes may coëxist and produce a blending of types; and that one type may be substituted for another, etc. Applying these principles to the different types of periodic fever, to inflammatory, typhoid, typhus, the mild, malignant, simple, congestive, and to all other forms of fever, he makes a fanciful complication, which, like the old hypotheses, to which I have referred in previous lectures, cannot pretend to have any foundation in established facts. These discrepancies and anomalies, not to mention others, serve to show how unsettled is medical opinion, and to justify me in giving my own.

From all the facts in the case, regardless of specious theories, I think we are justified in the conclusion, that fever is one disease, affecting always all parts of the system; but of two varieties, idiopathic and symptomatic. The former arises from the influence of some external cause, the origin and nature of which is not known, and is wholly independent, in its inception, of local irritation and inflammation. The latter is produced by the disturbing influence of some local disease, either primary or secondary. The

idiopathic variety may be mild and ephemeral, or grave and persistent; but the certain effect of its continuance is, the production of local disease according to the predisposition of the patient, or in obedience to some epidemic influence. Either variety may become continued, as far as fever ever is continued, from the influence of local irritation. Symptomatic fever may become periodic, under the influence of the cause of periodicity; and it may be secondary to idiopathic fever, from the retroactive effect of the local lesions which it has produced. Either form may be called hepatic, gastric, enteric, pneumonic, cerebral, etc., according to the seat of its prominent local lesion, whether such lesion be primary or secondary.

In yellow fever, according to all writers on the subject, the prominent local affection is inflammation of the stomach; but it is not believed that this is the primary disease, existing anterior to, and giving rise to the fever. So far from this being the case, it is well known that the fever always exists for one or more days, before the appearance of any of the symptoms peculiar to gastric irritation or inflammation. Until signs of the existence of this gastric lesion make their appearance, yellow fever differs so little from other forms of fever as to baffle all attempts at diagnosis. Hence the disagreements common among physicians, as to the true character of all epidemics of this disease, in their early stages. The closest ob-

servers fail to discover any difference between this and other forms of fever, for the simple reason that there is no difference. But after some cases have run their course, to the development of the gastric symptoms, then all agree to call the disease yellow fever, from the beginning ; and this has been the history of all the epidemics of this disease in this country. Some peculiarities may indeed exist from the commencement, but there is no criterion by which the character of the disease can certainly be determined, until the gastric disorder is established. Nor is this feature peculiar to yellow fever, for the same is true of the enteric, hepatic, pneumonic, and other forms of fever, and also of the exanthematous fevers. Unless we have a clue to their true character, from the known prevalence of epidemic or contagious influences, we can only become fully assured of it, by the development of their peculiar local lesions, whether of some internal organ or tissue, or of the skin.

I am of the opinion, therefore, that yellow fever differs only from the other forms of periodic fever in this : that for some unknown reason it has its prominent and characteristic local lesion in the stomach. This gastric lesion appears first in the form of irritation, and this culminates more or less rapidly, according to the violence of the disease, into inflammation, simulating gastritis from any other cause ; but generally it is more severe in its character, and more rapid in

its course. All writers on the subject acknowledge this gastric character of the disease; and Copland is so impressed with its distinctive nature that he proposes to discard the name yellow fever, which has as little pertinency in this case as jungle, swamp, and bilious fever have in others, and to substitute the more appropriate and significant designation, hæmagastric pestilence.

This disease, beyond all question, exhibits, in its early stage, all the characteristics of periodic fever; and, so far as is known, or can be proved, it is attributable to the same cause. Why in this case the principal local lesion should be found in the stomach, rather than in some other organ, can no more be explained, in the present state of our knowledge, than can the existence of certain local lesions in other cases, in other organs of the body. Nothing can be more certain, however, than that the position of the principal local disease in all fevers, whether existing as cause or effect, impresses its character upon the general disease, and very properly furnishes the epithet which distinguishes it from other forms of fever. Accordingly, the proper designation of this disease is, gastric fever.

It prevails mostly in hot climates, or in the hot season of temperate climates; and it is said not to become epidemic without at least two previous months of hot weather, during which time the average tem-

perature has been as high as seventy-nine or eighty degrees Fahrenheit. Commonly it becomes epidemic in this country in August or September, though sometimes earlier and later in the season; and in temperate latitudes it subsides upon the occurrence of freezing weather. In tropical countries, its course is run in three or four months; after which the epidemic gradually subsides; but in both instances sporadic cases continue to occur for several weeks afterward. But exceptions to these rules are frequently occurring, and it may well be doubted whether any climate or season is entirely exempt from this disease; although it is not likely to become epidemic in cold climates and seasons anywhere. Like other diseases, and other forms of fever, it has a preference for certain localities, and without our being able to perceive the reason why.

In the Old World, and especially in Africa, yellow fever has been known for ages, but it is not more than a century, probably, since it first became epidemic in America. For many years it was confined, principally, to the West-India Islands. Until quite lately it was unknown, as an epidemic, in Rio Janeiro; and to this day it has not appeared at Canton, Calcutta, Alexandria, Smyrna, or Constantinople; all of them cities which would appear just as likely to invite its incursion as New-Orleans, Havana, and Philadelphia. If any theory of its causation were

true, which has ever been promulgated, it would be difficult to determine why the above-named, and many other cities, should have been exempt. In all the labored essays upon the etiology of this disease, no good reason has ever been suggested why it should visit certain cities in warm latitudes every year, to the exclusion of others similarly situated ; or why it should become epidemic in one year more than in any other. Indeed, yellow fever is not confined to cities, although it is in them that the worst epidemics generally prevail. Some of the most violent cases I have seen originated in country localities ; and it has been proved by Dr. La Roche, of Philadelphia, that it has occurred on board of ships which had been for months at sea, without entering port. No place appears to be exempt from its visitations, excepting only closely confined prisons. No instance, I believe, is related of the origin of yellow fever in such places.

No good reason has been given why yellow fever should be attributed to any other cause than that which produces other forms of fever ; but medical literature abounds with arguments, surmises, and conjectures on this subject, in the examination of which you can indulge your leisure hours. If you confine your attention to actual facts, however, I think you will be forced to the conclusion, that we are not better informed in regard to this matter than we are in relation to the causes of other forms of fever, and

of many other diseases. No cause has ever been suggested by authors, which may not exist without producing the disease ; and nothing is more certain than that the fever may exist in the absence of every cause which has been named as capable of producing it. We can no more determine what causes this, or any other form of fever, than we can tell by what agency particular organs of the body become diseased as effects of fever. These things are still among the *arcana* of our profession, and we cannot hope to extricate them from obscurity by idle speculations.

As in other forms of fever, the attacks of this disease are slow and insidious. When prevailing as an epidemic, the first indications of its approach are generally felt in the night. They are the usual signs of incipient fever, but often, for several successive nights and days, the symptoms are so slight as scarcely to attract attention. The subject is aware of the existence of some abnormal movements and sensations ; but as these soon pass away, and do not interfere with his active duties, they are soon forgotten. Indeed, the transient indisposition is not unfrequently followed by a kind of excitement which is not of an unpleasant character, and which sometimes gives rise to the declaration, that the sufferer is in the enjoyment of the most perfect health. This slight indisposition is not unfrequently followed by an exuberance of animal spirits, and the patient laughs at the idea of dan-

ger. But he is certain to be soon undeceived. The cumulative power of the exciting cause deepens its impression upon the animal economy, at every recurrence of the daily paroxysm, until the patient is prostrated, and calls loudly for help. This is apt to be considered the actual period of attack, and hence the idea that the disease comes on suddenly and powerfully, than which there is no greater mistake in connection with this formidable disease. It is not thus suddenly, indeed, that any form of fever attacks the human body. The cause acts upon the system gradually, so as in some cases to be resisted by the powers of nature. Time is always required, longer or shorter in different persons, for the cumulative influence to produce decided effects.

The symptoms of yellow fever, in its early stages, do not differ from those of other forms of fever to a sufficient extent to enable us to diagnosticate the disease from these alone. They are the common symptoms of periodic fever, and generally of so mild a character as to induce the physician to venture upon a favorable prognosis. The inexperienced are frequently led astray by this, even in severe epidemics, and hastily commit themselves to opinions which are soon falsified by results. The chill is like any other, and if the reaction differs from that in other fevers, it is generally on the side of moderation. The pain in the head, back, and limbs, is perhaps more violent

than we could reasonably have expected in such moderate febrile excitement, and the conjunctivæ more injected. The tongue is not often thickly coated, and the complainings of the patient are sometimes such only as attend upon the beginning of a common cold.

The paroxysms becoming more severe, are soon followed by signs of gastric disorder, and then we have, from such time forward, to contend with all the appalling conditions attending upon malignant gastritis. Few physicians are familiar with this local disease in its idiopathic form, as it is one of very rare occurrence. Several eminent European physicians have declared that they have met with only a few cases of gastritis in the course of a long-continued private and hospital practice. I have myself seen only four cases, which were caused by habitual drunkenness, pregnancy, and poisoning, and each of these simulated yellow fever very closely, three of them ending in black vomit. They were, indeed, cases of gastric fever, of the symptomatic kind.*

* Since this lecture was written, I have treated a somewhat remarkable case of gastritis, from the influence of pregnancy. Mrs. B., of Memphis, Tennessee, in the sixth month of her fourth pregnancy, was seized with nausea and vomiting, which continued, with constantly increasing violence, for fourteen days. On the eleventh day the disease had assumed all the symptoms and external appearances of yellow fever, insomuch that her attendants and friends, who were familiar with the disease, became much alarmed on account of it. During the last three days, the skin and eyes became yellow, the fluid ejected from the

In most cases of yellow fever there is a decided abatement of pain in the head, back, and limbs, and it is then that the gastric symptoms develop themselves with distinctness. These are, nausea and vomiting, thirst, soreness and oppression at the epigastrium, a sensation of heat in the stomach and bowels, constipation, or else watery stools, great restlessness, anxiety, delirium, and sometimes coma. The eyes become dull, heavy, and bloodshot, the skin and tongue cool and yellowish ; the secretion of urine is lessened or entirely suspended, the pulse becomes slow and feeble, black vomit and low muttering delirium set in together, and a lingering stertorous insensibility leads gradually to death.

This is a brief description of a fatal case of yellow fever, and it is also a description of fatal gastritis arising from any other cause ; a disease which is by far the most insidious, deceptive, and dangerous of all the diseases which physicians in this country are called on to treat. No other disease is so brief in its course, so distressing and fatal, without affording more decided

stomach assumed a glairy and acrid character, containing floating flocculi as in the early stages of black vomit in yellow fever. These were constantly increasing until the last day, when she threw up vast quantities of black vomit, with similar discharges from the bowels. The usual delirium came on, and she died almost in the act of giving birth to the foetus. This case occurred in the month of June, when the city was healthy, without any sign of yellow fever, and so it continued during all the summer and autumn.

ed evidences of its existence and dangerous character in its early stages. A patient with gastritis, whether caused by drunkenness, local irritants, pregnancy, or fever, will often be far gone toward a fatal termination before it can be known, from any existing symptoms, that life is in danger. It is a mistake, therefore, to suppose, that it is in yellow fever only we have to contend with this difficulty, although it be true that a merciful Providence has rendered gastritis a rare disease from other causes. To me it is quite evident, as the result of my own experience, that the peculiarities of yellow fever are the peculiarities of severe cases of gastritis, with the superadded disadvantages arising from fever primarily existing.

There has been much difference of opinion, as to the existence of periodicity in yellow fever, nearly all modern writers on the subject contending that it is a fever of a single paroxysm, continuing three days, or longer. I consider this to be a grave and extraordinary mistake. I have carefully observed the febrile movement in thousands of cases of this disease, and therefore give my opinion upon the subject with confidence. The error, I apprehend, has arisen from the fact, that the exacerbation and the remission are, in general, less distinctly marked than in some other forms of fever, and especially in violent cases; and from the more important fact, that the daily remission in this, as in other grave forms of fever, nearly always

takes place very early in the morning, when it is least likely to be observed. From all my observation and experience, indeed, I conclude that the human system cannot and never does sustain a continued febrile action without remission, for more than a single day. The periodic movement, in a large class of diseases, would seem to indicate this as a law of the animal economy. But however this may be, it is very certain to my mind, that in all cases of yellow fever there is, in fact, a daily remission. This occurs about the dawn of day, which, on this account, is the important period for the application of remedies ; and a physician who fails to notice and take advantage of it, is not likely to be very successful in treating the disease.

A remarkable feature in this disease is, the sudden and entire suspension of febrile excitement, in some of the more violent cases, just before a fatal termination. The patient and his attendants are apt to be wholly deceived by this calm remission, which generally appears, like other remissions, early in the morning, and is a state of utter hopelessness. But this is peculiar to malignant gastritis in every form. A confirmed drunkard laboring under gastritis, in this city, rose early one morning from a bed, to which he had been helplessly confined for more than a week, declared himself quite well, walked for half an hour or more up and down the room, congratulating himself

upon his recovery, then threw himself upon a pallet on the floor, and immediately expired. The extraordinary muscular strength exhibited by some, just before death, is another strange anomaly belonging to gastritis. Both these peculiarities are apt to exist in connection with black vomit, but this is not always present with them.

Yellow fever is a disease of sthenic character, bearing, and often requiring, active depletion and contra-stimulation. The symptoms fully justify this conclusion, and I have demonstrated its truth by active depletion in hundreds of cases. But in severe and fatal diseases, the stage of excitement above the standard of health is sometimes quickly followed by a stage of collapse below that standard ; and it is evident, that the treatment proper and necessary in the former, would be injurious and perhaps fatal in the latter stage. When I recommend free and copious blood-letting as a remedy, therefore, you are not to consider it as advised for all stages and under all conditions. It is the main business of physicians to discriminate in such matters, and it is for want of it that the remedy has been brought into partial disrepute, by repeated failures. But it is all the more necessary in yellow fever, because the condition of the stomach precludes the use of tartar emetic and other sedatives, on account of their nauseating and irritating effects upon that viscus. General and topical

bloodletting must therefore be relied on, together with cold bathing and cold enemata, to relieve sthenic action.

It is not less evident to my mind, that yellow fever is a periodic disease, but the remedies for this must also be well timed. I have told you, in a former lecture, that the common effect of quinia is, when given in the exacerbation, to enhance the febrile force; although in cases of moderate violence, large doses of quinia may, even in this stage, cause sedation. In so grave a disease as this, it would be imprudent to try such experiment. The proper time for the remedy in this, as in other forms of periodic fever, is in the period of remission; and as this is short in all violent cases, you may increase the chances of success by beginning its exhibition just as soon as there are evidences of an abatement of the paroxysm. And it must always be borne in mind, that success depends much upon the early application of remedies. Every successive paroxysm lessens, in a rapid ratio, the chances of cure.

The use of purgatives, to the extent required to prevent intestinal accumulations, is very important. Even after all the *ingesta* have been evacuated, the bowels become, in short intervals of time, overburdened with excreta, which must be promptly discharged, or distressing consequences will follow. And these remedies, namely, bloodletting, refriger-

ants, antiperiodics and cathartics, must be our principal reliance. If we know when and how to use them, and have the proper opportunity, many cures may be effected ; and it is of little consequence about the thousand other remedies recommended. In cases of early collapse, great benefit is often derived from warm clothing and hot beverages.

It is proper to remark here, that in what I have said I have had in view only the more violent grades of the disease, such as always prove fatal unless relieved by treatment. But you are not to infer that I consider the disease to be always of a violent and dangerous character. On the contrary, there are, in all epidemics of yellow fever, many cases of a mild and tractable grade ; or, to be more exact, all cases are mild in their inception, and it is only a portion that become severe. Native-born citizens of hot climates, and persons who have once suffered a severe attack of the disease, are generally relieved by mild treatment, and not unfrequently recover without the use of remedies. And it is not improbable that the time will come, when a large proportion of those attacked will be cured by early and judicious treatment. It may be hoped, indeed, that by the use of preventives, in the form, perhaps, of antiperiodic medicines, this and other forms of periodic fever may be prevented.

The *post-mortem* appearances in this, as in many other diseases, are only a poor guide in diagnosis.

The stomach always shows signs of more or less inflammation or congestion, but not at all commensurate in degree with the violence of symptoms. There are also, in general, evidences of diseased action in the brain, liver, bowels, kidneys, etc., but they are rarely ever such as those who have witnessed the progress of the disease would expect to find. I have known the body of a man dead of yellow fever to be dissected before a medical class, without creating any suspicion of the cause of death. Yet there are, in the outward appearances, strong indications of the character of the disease, and which leave little doubt upon the mind of the experienced observer. When the patient has had black vomit, the proof is more positive. This is found in large quantities in the stomach and duodenum, and sometimes throughout the intestinal canal.

The black vomit is ascertained to be gastric and enteric hemorrhage, and it is one of the effects of the disease about which there has been much difference of opinion. It is not constant, and not more an essential symptom of yellow fever than occasional hemorrhage is of other forms of fever. When accompanied by aberration of mind, as it generally is in yellow fever, black vomit may be considered a pretty certain indication that the gastric inflammation has passed into the gangrenous state, rendering the case hopeless. Hemorrhage sometimes occurs in the

stomach and bowels, in fever, without gastric inflammation, and not being accompanied by aberration of mind, and the other fatal symptoms of yellow fever, it is not only not fatal, but a critical discharge, like hemorrhage from other parts of the body. The difference seems to be this: that of gastritis occurs in the gangrenous, and that of other forms of fever, in the congestive or inflammatory stage. One is a sign of approaching dissolution; the other, an effort of nature to relieve the mucous membrane of its engorgements. One is a fatal, the other, a critical discharge. This is an important distinction.

LECTURE X.

PNEUMONIC FEVER.

PNEUMONIC fever is another variety of febrile disease which requires special remark, because not only of the discrepancies in opinion regarding it, but on account also of the general prevalence of the disease in all the Southern States during the winter season. The common doctrine has been, that pneumonia is primarily a local disease, an idiopathic inflammation of the lungs, and that the fever which attends upon it is a secondary affection, or symptomatic fever, caused by the irritation proceeding from the local affection. And doubtless it is true of the lungs, as of other organs of the body, that they are liable to idiopathic inflammation, causing symptomatic fever. Perhaps in a large majority of cases in non-malarious regions, the disease is a local one in its inception and early stages, and sometimes this may be its character also in malarious districts. But it is undoubtedly true, that in these latter, with which we have to do in the practice of our profession, the fever is almost uniformly the primary affection, and the local lesion

which gives the disease its name is secondary, and the peculiar local lesion of the fever.

These views, which I have for many years held, and upon which I have constantly acted in the treatment of this disease, have, as some of you may chance to know, been called in question, and most ably controverted. A short and unpretending essay of mine upon this subject, first published in the *New-Orleans Medical Journal*, and afterward issued in a pamphlet form, had a principal agency in the production of a large octavo volume, by Doctor La Roche, of Philadelphia, one of the most elaborate and able medical writers America has produced. The exclusively local character of the disease is in that work most ably advocated, and at such length, as to quite exhaust the argument on that side of the question; but with the full acknowledgment that the local and general disease, the inflammation of the lungs, and the fever, are often most intimately blended; but not in such manner as to make it proper to direct our means of cure primarily to the relief of the general disease, rather than the local. The argument of Dr. La Roche on the origin and influence of malaria, in the work to which I refer, is very ample, eloquent, and comprehensive, leaving little to be said on that side of the question by others. But he has not proved, nor can it be proved, that malaria, or any other reputed cause of fever, does not give rise to a febrile affection, that

may have its most prominent local lesion in the lungs as well as in other organs of the body; the former being the primary and the latter the secondary affection.

In my brief essay, before referred to—an essay of only seven pages—which was read before the Memphis Medical Society in 1851, I made the following observations, which were taken as a sort of text for the ponderous volume of my distinguished friend: “According to my observations, the pneumonias which prevail in this country . . . are really and substantially nothing more than a peculiar form of remittent or intermittent fever. . . . This protean character of our fevers arises in part from the season of the year and the particular localities in which they occur; but mainly from the organs of the body which become involved in the diseased action, the predominance of inflammation, or congestion, and the character of periodicity. In the spring, we are apt to find these diseases assuming the names which have reference more particularly to this periodicity and general pathology. As summer comes on, the greater complication of the hepatic organs changes the name, or adds an epithet to designate a prominent symptom. In autumn, the chylopoietic viscera become more strikingly involved in the diseased action; and this again is indicated by an ever-changing nomenclature. But when winter approaches, and the

subjects are exposed to sudden transitions of temperature, the thoracic viscera are called upon to bear the burden of local disease, and then it is that the names pleurisy, pneumonia, pneumonia typhoides, pneumonia biliosa, pleuro-pneumonia, bilious pleurisy, lung fever, etc., become familiar sounds."

Now, to show you that such views are not singular, you may see, on perusing this remarkable work of Dr. La Roche, that they have been sustained by many distinguished medical writers; such, for instance, as Lancisi, the great originator of the doctrine of miasm; Sydenham, the projector of the most convenient of all etiological theories, the "epidemic constitution of the atmosphere;" Cleghorn, the philosophical observer of the diseases of Minorca, so similar to our own; Rush, the father of American medicine, and the true expounder of the fevers of Philadelphia; Copland, Good, Broussais, Watson, Chalmers of South-Carolina, and Condie, Wood, Bell, and others, of Philadelphia. Many other distinguished names might be added, but these are enough for my present purpose, which is to show you, that the doctrines which I am advocating are not peculiar to myself. I only claim the credit, if there be any credit in it, of discovering the applicability of these doctrines to the disease as it prevails in the South, and of calling to it the attention of physicians, and especially of physicians from the North practising in the South.

As in other forms of periodic fever, this disease comes on with a chill, passing through the different stages of the paroxysm ; but in most cases, the early paroxysms are mild and transitory. These become more and more severe at every succeeding recurrence, and no signs of the pneumonic affection appear for several days. Condie says : "In many instances, it is only after the fever has continued several days that pain in the chest is complained of." Wood remarks, that "in those cases in which the fever is the primary affection, the chill and febrile symptoms generally precede those proper to the pneumonia for one, two, or three days, and sometimes a longer period." Bell, after speaking of the febrile symptoms, goes on to say : "To-day the patient complains of gastric symptoms ; to-morrow, of a tendency to cerebral congestion ; subsequently, of rheumatic pains ; until finally the pneumonia discloses itself." Do these look like proper descriptions of idiopathic pneumonitis ? They describe the early stages of pneumonic fever very well, but the descriptions are equally well suited to the early stages of gastric, enteric, and hepatic fever. When periodic fever first assails the human constitution, no one can certainly determine what will be its ultimate character, and what particular organ of the body is destined to suffer most, except from a knowledge of the epidemic influences prevailing. Indeed, nothing is more common, than for other organs than

the one which is to be the final seat of the disease, to be more seriously threatened, until several febrile paroxysms are passed.

The local lesion in this variety of fever is generally obscure in its early manifestations, insomuch that physicians are sometimes deceived as to its existence, until it has become of a very serious character. At those seasons when this complication may be expected, or at times when the disease is prevalent, we have reason to be on the alert for the discovery of pneumonic symptoms. These are, pain in the chest, quickened respiration, florid countenance, etc. ; but the most certain means, perhaps, for the discovery of incipient pneumonitis is by auscultation. There is a sound in the act of respiration called crepitant rale, easily detected by those who are experienced in such examinations, and which is said to indicate the existence of the pneumonic inflammation, even before it could be suspected from other symptoms. But in most cases it is not pneumonitis alone that constitutes the local lesion. The pleura is quite as likely to be implicated, and also the bronchial tubes. Bronchitis, I believe, nearly always exists, from the intimate connection between the bronchial tubes and the parenchymatous structure of the lungs. As the disease progresses, the liver also becomes implicated, and hence the adjective hepatic, or bilious, is so often added. We have, therefore, a combination of pneumo-

nia, bronchitis, pleurisy, and hepatitis, as local lesions, but the pneumonitis is the most prominent, and very justly gives character and name to the disease.

If the febrile symptoms are early met by the appropriate treatment, the local disease cannot become troublesome, and it may not be so far developed as even to be noticed. But several successive paroxysms of constantly increasing intensity, without remedial measures, must inevitably create such a degree of local disturbance, as to require the most skilful treatment to insure relief. You have then imposed upon you the task not only of curing the fever, which in the earlier stage would have been an easy matter, but of managing local irritation and inflammation of the most delicate nature, and which are constantly on the increase in their intensity. The fever also becomes more persistent, from the reciprocal influences of the local disease, as in cases of symptomatic fever. It will be evident at every step of progress in the treatment, that the local affections cannot be relieved while the daily paroxysms of fever continue, nor can the fever be wholly subdued while the system is laboring under the influence of a well-established local inflammation. Your treatment must therefore be designed for the relief of both ; it must be constitutional and topical, antiperiodic and antiphlogistic.

In the preliminary stage, and before the local lesions are fully established, the disease may be un-

doubtedly cured by the usual antiperiodic treatment alone; and in that case we are not likely to hear anything said of pneumonia. As in gastric or yellow fever, the constitutional disease subsides before its peculiar local lesion appears, and the case passes as a common or ephemeral fever. But after the thoracic lesions are produced, the disease assumes a character somewhat more serious, and the treatment becomes proportionally complicated. You have not only a local affection of a serious nature to contend with, but the fever has become intensified by repeated returns of the paroxysm, at the same time that it is rendered more unmanageable by the local irritation.

Bloodletting, when properly timed, relieves the congestions and equalizes the circulation, affording great advantages in the subsequent treatment. As in other forms of periodic fever, however, it is principally valuable in the early stages of the disease, and the extent to which it may be carried depends upon the violence of the attack, and the prevailing severity of the disease in other cases. When the local lesions have become developed, it is still a useful remedy, and sometimes essential; but in many cases the pneumonic affection is more of an irritative than inflammatory character, and bloodletting is not required, as in cases of gastric and enteric inflammation; and in the more advanced stages it must be used with much caution, as there is danger that the vital powers may

be reduced below the standard of health, when the loss of blood would be dangerous and perhaps fatal. In some epidemics of this disease, there is a strong tendency to a reduction of the vital powers, and such cases are called typhoid. In negro subjects, the prostration is sometimes very sudden, and death ensues on the third or fifth day. In such cases, bloodletting is a dangerous remedy, and it cannot be used after the inceptive stage, if, indeed, at all. In many cases of pneumonic fever, topical bloodletting is the safer and more efficient remedy; and sometimes dry cupping is to be preferred.

Tartar emetic has justly attained great celebrity as a remedy in this form of fever. Its importance, indeed, can scarcely be over-estimated. It should be given in frequently-repeated doses, especially during the exacerbation of fever, and in such quantity as the stomach can tolerate. It is only by experiment that we can ascertain what amount any patient will be able to take; therefore it is best to begin with small doses, say as small as one sixteenth of a grain, and to increase the quantity from dose to dose, until nausea is produced, or even vomiting. Then, after suspending it for two or three hours, it will be found that the patient will be able to bear larger doses than before. I prefer, in most cases, to repeat the tartar emetic every hour, that its sedative effect may be steadily maintained. Tartar emetic in crystals should

always be preferred, to avoid the adulterated article often sold in the shops. The good effects of this remedy are greatly increased by the concurrent use of the nitrate of potash, which, if well diluted, may be given in doses of ten to twenty, and even forty grains; but the two medicines should not be combined, nor should the nitrate be given as often as the other. The free use of diluent drinks is an essential concomitant of this treatment, and especially if large doses of nitrate of potash are given. Without these, the stomach will suffer from too great irritation.

Opium, which is so mischievous in other forms of fever, except in their early and forming stages, and which is so fatal a poison in gastric fever, may in general be used in moderate quantity during the whole course of pneumonic fever. The disordered innervation with which fevers begin their course, appears to be perpetuated in this variety, and the principal local lesion being in the thoracic viscera, there is less danger of interference with important secretions by the use of opiates. When expectorants are employed, there is another reason why opium may be useful. This class of remedies have a diuretic as well as expectorant effect, and when they operate actively on the kidneys, we have little to expect from their expectorant effect; and this diuresis is prevented, in great measure, by opium. Still, it is no uncommon thing, I apprehend, to witness the use of opium in

this form of fever to an injurious extent. In the progress of the disease, especially when protracted, the liver and other viscera of the abdomen become seriously implicated, and just in proportion as they do so, opium becomes injurious by reason of its effect in retarding secretion in those organs.

Chloroform is a valuable substitute for opium in this and other forms of periodic fever, and over which it possesses many advantages. It is more powerful to relieve congestion, equalizing the circulation of the blood more promptly, and exercising little or no influence to the injury of glandular action. If given in the chill, the patient is sometimes so completely relieved that very little morbid or febrile reaction follows; and frequently the congestions which cause such embarrassment to the respiratory function yield to the influence of chloroform more readily than to any other remedy, not excepting bloodletting. This medicine has not yet come into extensive use in febrile affections, but such is its power over the nervous system that I venture to predict for it as prominent a place in our catalogue of internal remedies as it now occupies in our list of anæsthetics. In severe cases, it may be given in doses of a fluidrachm.*

Calomel is the safest and most efficient cathartic in this disease; but on account of the use of opium it

* These remarks have reference, exclusively, to the introduction of chloroform into the stomach, and not to inhalation.

is sometimes necessary to assist its operation with castor oil. It is important that cathartics should be administered in such manner as to secure the discharge of thick feculent stools. Whenever a hydrogogue effect is produced, there will be an increase of pneumonic symptoms; and in the advanced stage of dangerous cases, a few copious watery stools are very likely to prove fatal. The proper management of the bowels, therefore, is an important consideration in this disease; and I have often found aloëtic purgatives useful. Their action upon the rectum is beneficial in the way of counter-irritation; and there may be reason to believe that counter-irritation at this point exerts a special influence over the lungs, which some have believed to be the effect of fistula in ano. In giving calomel either as a cathartic, or as an alternative, we have to use every precaution against salivation, which is likely to be favored by the concurrent use of opium.

As counter-irritants blisters are often employed with beneficial results, and they are generally applied directly over the seat of pain, which is most likely to be in the pleura. But in using this remedy it must be borne in mind, that in case of high local excitement the stimulating effect upon the surface is sometimes communicated by sympathy to the diseased parts beneath, thereby increasing the very difficulty we wish to remedy. Cupping and leeching are gen-

erally more efficient remedies, if the patient will bear them, and these are capable of being so graduated as to incur little risk of dangerous prostration. Sinapisms are also used, and they have the advantage over blisters in their more prompt effect. As they leave no permanent soreness, they can be re-applied as required. After all, it is doubtful whether any thing is more valuable for this purpose than tincture of iodine. This may be painted over the whole chest, if necessary, and repeated as occasion requires, care being taken to guard against painful effects. As an adjuvant to, or substitute for all these, I recommend the application of dry cups over the spinal column.

These are some of the means to be used in the treatment of pneumonie fever; but it must never be forgotten that all are unavailable without the vigorous application of the antiperiodic treatment. This is to be pursued just as in other cases of periodic fever. Without this, paroxysm will follow paroxysm, until the vital powers are exhausted. Such a case will be called pneumonia, or more probably, if it prove fatal, typhoid pneumonia, for the term typhoid covers a multitude of professional sins nowadays; but it is in fact a case of periodic fever, with the accidental concomitant of local lesions, the effects of fever, among the thoracic viscera. Without the fever these would have had no existence; and with the fever acting as an exciting cause, the local affection cannot be

cured. For the want of this understanding of the case, great mortality has resulted from the prevalence of this form of fever in the South.

No apprehension need be entertained that the anti-periodic treatment bestowed upon the fever will prove detrimental to the local disease, tighten the cough, impede the respiration, etc., as some authors warn us. These are mere figments of the imagination. The proper remedies for the constitutional disease are not likely in this, or in any other form of fever, to increase the intensity of the local lesions, which have been caused by the fever. On the contrary, every remedy having an influence toward the cure of the primary disease, must be expected to exercise a beneficial effect over the secondary affection, upon the principle of removing the cause. It may be different in cases of pneumonia without any periodic complication, when antiperiodics are not indicated. In such cases, these remedies not only have no curative effect, but they nearly always produce unpleasant and injurious influences, and this is equally true in other forms of disease; if there is no periodicity to cure, anti-periodic remedies cause more or less distress, and tend, perhaps, to the increase of local disease.*

But idiopathic pneumonia, occurring in subjects laboring under a strong predisposition to periodicity,

* I ought to except, perhaps, the beneficial effects sometimes resulting from the great sedative power of quinia.

from long exposure to its cause in what are called malarial districts, may have the effect to call the periodic movement into action ; and then we have a similar complication to that we have been considering, the local excitement being the primary, and the fever the secondary affection. This is a thing very likely sometimes to happen, but it is by no means peculiar to pneumonia. The periodic movement is called into action, in such subjects, by local irritation in almost any other part of the body, by rheumatism, and even by mechanical injuries. And when this is the case, the antiperiodic treatment is just as urgently required as in idiopathic fever. The pneumonic inflammation arising from other causes may exist for several days before any signs of periodicity appear ; and in such cases I believe there is, in general, more active inflammation, and less of nervous irritation in the local disease ; and the treatment must be varied accordingly. Idiopathic pneumonia, whether occurring with such complication or not, is, I suppose, less likely to be accompanied by bronchitis, and especially by pleuritis, than when the disease appears as a local lesion of periodic fever.

Pneumonic fever sometimes becomes epidemic among negroes on large plantations, often extending to several plantations in the same neighborhood, proving exceedingly violent and fatal. In such epidemics the pneumonic affection is often imperfectly develop-

ed, and, indeed, can scarcely be detected, except by auscultation, before the patient is found to be in collapse, or the sinking stage. Few diseases are more fatal to the negro, in whom the vital powers are less energetic than in the white subject ; and the sinking stage of malignant disease proportionally more rapid. On account of this tendency to early prostration of strength, this form of the disease is generally called typhoid ; but it is not to be doubted that the debilitated condition into which patients sometimes fall, even at so early a period, is not direct, but indirect ; being preceded by a stage of constitutional excitement above the standard of health. There is a stage in such cases, therefore, in which the contra-stimulant treatment is indicated, and required to be promptly and vigorously applied ; but it is of the utmost importance that it should be well timed. After the stage of collapse is initiated, the patient cannot bear depletion. Bloodletting, both general and topical, tartar emetic, nitrate of potash, and calomel, are all important remedies ; but quinia in this, as in other forms of the disease, is the most valuable of all our remedies. It should be given from the early inception of the disease, as much as possible in the remissions ; and in sedative doses ; guarding against prostration by the use of carbonate of ammonia, sina-pisms, and the internal administration of chloroform. The nervous character of the disease, in its early stages, and the thoracic congestions accompanying the

chills or cold stages, call especially for the internal use of chloroform, which may be given several times a day in pretty full doses.

But on account of the insidious character of this disease in the negro, there is sometimes a difficulty in bringing the cases under proper treatment in the first stages of the fever, when alone is it easily controlled. A negro, while at his usual labor, complains of debility and loss of energy, and particularly of weakness in his limbs, which continue for an hour or two, and then pass away. The next day there is a recurrence of the same symptoms, only a little more severe ; and for several successive days the indisposition is repeated without attracting much attention ; until finally he is quite prostrate, and soon afterward in the sinking stage of the disease, or stage of collapse. It can hardly be expected that in the beginning of such an epidemic prompt and efficient treatment will be applied ; but after a few fatal cases have occurred, there can be little excuse for delays in the treatment which deprive the patients of almost their only chance of recovery. No diseases, not even cholera and yellow fever, require earlier and more prompt attention than pneumonic fever.

It may be proper, in this connection, to say something of the remedial power of veratrum viride, especially as it is in pneumonia, or the pneumonic form of fever; that it is more particularly recommended. The effect of this remedy in restraining the frequency

of the pulse is well established, and the evils arising from undue arterial excitement are so great, that high expectations in regard to the remedial efficacy of this article, in all such cases, have been raised in the minds of medical men. But it is true in this, as in many other cases, that expectations founded upon theoretical views have not been fully realized. The medicine is a harsh one, and frequently the irritation it produces in the stomach and bowels is seriously objectionable. No doubt it is a valuable remedy in skilful hands, but it must be used with extreme care and caution, or injury will result from it. I have generally preferred the aconite to answer the same indications; for, although it may be somewhat less prompt in its influence over arterial action, it certainly exercises a more kindly effect upon the nervous system, and with less painful effects upon the mucous tissue. Indeed, we have few remedies which exert so much control over disordered innervation, and over cerebral, spinal, and meningeal irritation. Its efficacy as an external application, in neuralgic affections, is also well established. But this is also a virulent poison, when given in too large quantity, and you cannot well be too cautious in its exhibition. I have generally used it in conjunction with tartar emetic, and the nitrate of potassa; and am inclined to the opinion that every dose of tartar emetic given in this disease should be accompanied with a dose of aconite, as its proper adjuvant remedy.

LECTURE XI.

ENTERIC FEVER.

This, like other, and more than most other, forms of fever, comes on in a slow and insidious manner, with exacerbations and intermissions; and, unless relieved by treatment, increasing in intensity from day to day; but in general several days elapse before the sufferer is induced by the urgency of the symptoms to call for medical aid, or even suspects that he is threatened with serious disease. The early paroxysms are very obscure, and frequently they are evidenced only by sensations of debility in the limbs, and especially in the knees. These paroxysms are of short continuance, and the periods of apyrexia afford little signs or sensations of disorder. Nor is it possible in this, any more than in the other forms of fever, to determine from the symptoms alone what is to become its peculiar character; or in what organs of the body its principal local lesion will be located. Indeed, the head, the chest, and the stomach, are more likely to exhibit the first signs of local lesion, and a week or more passes away before the real tendency of the fever in this respect can be fully determined.

Under the mysterious power of some epidemic influence, or the operation of some other unknown cause, the symptoms after a while begin to indicate that the seat of the principal local affection is to be in the bowels. This appears to consist in congestion, and afterward inflammation of the mucous membrane of the intestinal canal, beginning in the lower portion of the ileum, and probably at the ileo-cecal valve. There is generally little evidence, at least in the early stages, that the muscular structures are at all involved, the symptoms not being those of enteritis. The soreness and pain are less, and the pulse is fuller and less frequent. These enteric symptoms are scarcely initiated before the signs of prostration appear, which usually attend upon inflammation of the mucous tissues ; and the local lesion becomes a source of nervous irritation, as in symptomatic fever. The apyrexiae, from this cause, become less distinct, and the case is apt to be declared one of continued fever.

Whatever may be the case in other parts of the world, it can scarcely be doubted by any one accustomed to treat the fevers prevailing in the South, that the disease which I am now considering is a form of periodical fever. It begins as in other forms which are distinguished from each other, mainly, by their peculiar local lesions ; and like them it continues without any marked distinctive symptoms, until the febrile impression is made upon the mucous membrane of

the small intestines ; when the irritation thus produced is reflected upon the constitutional disease. The effect is to increase and prolong the febrile excitement, in the same manner that symptomatic fever is produced by local inflammation. Other organs soon become also involved by sympathy. Nausea exists as in gastric fever ; pneumonitis and bronchitis, as in pneumonic fever ; and cerebral irritation, as in other cases of diseased mucous membrane of the intestinal canal, in chronic diarrhea, cholera infantum, etc. The debility, which in the early stages was temporary nervous depression, soon becomes permanent and progressive, from a want of proper assimilation of the food. The mucous tissues of the bowels, and the follicular and mesenteric glands, cease to perform their appropriate functions ; and the patient is continually sinking from the effects of inanition.

A long train of perplexing and anomalous symptoms ensue, which are so little under the control of remedial measures that some physicians have advised, as in despair of any successful treatment, that the only safe and hopeful course is, to abandon the patient to that kind and sometimes efficacious agency, the *vis medicatrix naturæ*. In general, however, there is no want of efforts on the part of the physician to afford relief by active treatment. The indications are so varied and complicate that there is more danger in this than in other forms of fever, of

doing injury to the patient by excessive, and especially by inconsistent, medication. It is necessary that the bowels should be evacuated, but their mucous lining is now so susceptible to the action of purgatives, that moderate sized doses are apt to cause hypercatharsis. Opiates are indicated to control irritation, and check alvine discharges, but they operate to arrest still further the flagging secretions. Stimulants are required to sustain the sinking strength, but they at the same time enhance the febrile excitement, and intensify congestion. Nourishing food is recommended for the same object, but digestion and assimilation are so far impaired that much of it passes along the intestinal tube undergoing only chemical changes, and increasing the irritation of the mucous membrane in its course. Thus is the system worn out and exhausted by the united agency of disease and treatment, and if at the expiration of twenty, forty, or sixty days, the patient has been able, by constitutional vigor and fortuitous aid, to survive, the disease may finally subside, and a slow recovery follow.

As may be inferred from remarks already made, the symptoms in enteric fever are multifarious. In the early stage, we have the usual daily paroxysms, and the usual increase in severity from day to day; but after a certain time, longer or shorter according to the violence of the disease, the local lesion in the mucous

membrane of the bowels becomes established, and then the paroxysms are less distinct ; and the apyrexial period is more irregular and less complete. From this time the tongue becomes coated, with reddened edges, the appetite is gone, the bowels are loose, or easily moved, the skin becomes hot and dry, the cheeks flushed, and the pulse moderately accelerated. There is, also, headache, pain in the back and limbs, restlessness, wakefulness, nausea, abdominal pains, tympanitis, a gurgling sound in the bowels upon being pressed or moved, cough with symptoms of bronchitis, and scanty and high-colored urine. Then the tongue becomes dry, and of a brownish color, deglutition difficult, the abdomen distended ; petechiae, vibices, rose-colored spots and sudamina appear upon the skin ; the patient suffers with stupor, delirium, and deafness ; the eyes are injected and expressionless ; the tongue dry and tremulous, often black, hard, and swollen ; sordes collect upon the teeth ; the pulse is more enfeebled ; subsultus and picking of the bedclothes begin ; the urine is either not secreted or retained ; involuntary discharges from the bowels take place ; there is sometimes hemorrhage from the nose, mouth, and anus ; the surface becomes cool, moist, and clammy ; the body slides down in the bed ; hiccough sets in, and the appalling scene is ended by death.

Some of the symptoms which give hope of recov-

ery are, the gradual cleaning of the tongue about the edges, with a more healthy secretion of saliva; greater fulness of the pulse; improvement in mental vigor; subsidence of abdominal soreness and distension; more healthy alvine discharges; sound and refreshing sleep; disappearance of febrile action, etc. But if the disease has been of long continuance, the convalescence is slow and tedious. The tone of the digestive organs has become so much impaired, that the food which is craved by improving appetite is imperfectly digested, and the irritation produced upon the still tender bowels causes troublesome diarrhea, or perhaps invites back the periodic movement, and we have what is called a relapse; making it necessary to repeat much of the previous treatment. And it is not unfrequently the case that such relapses prove more difficult of cure than the original attack. They are nearly always complicated with periodicity.

The *post-mortem* appearances of disease, as in other forms of fever, are less distinct than might have been expected from the long-continued severity of the symptoms. The mucous membrane of the intestinal canal presents more or less of a morbid aspect throughout; but most distinctly in the ileum, and in the neighborhood of the ileo-cœcal valve. It extends, also, in somewhat less degree, to the colon and rectum, on the one hand, and to the duodenum and stomach, on the other. Even the œsophagus

gus and pharynx are not exempt, nor the mucous membrane of the mouth and nasal passages. The mucous follicles are of course more or less diseased ; the elliptical patches of Peyer, and the solitary glands, are now said to be always enlarged, hardened, and sometimes ulcerated. But these are very minute organs, and notwithstanding their enlargement in this disease, it is only very recently that even their existence has been discovered by autopsic examinations ; although enteric fever has probably prevailed for many centuries. The mesenteric glands are said to be similarly affected. The liver, spleen, and kidneys are also implicated, as are, indeed, to some extent, all the organs and tissues, in proportion, perhaps, to the intensity of the disease, and the period of its continuance. Perforations of the intestines are said sometimes to exist, and generally from ulceration of the glands in some portion of the ileum. This intestine seems, indeed, to be the primary and principal seat of the prominent local lesion, in enteric fever.

Now, I suppose you will have had no difficulty in perceiving that the disease, of which I have given a hasty and succinct description, is none other than what is now called typhoid fever : a disease about which such voluminous publications have been made within a few years past. It is not a new disease in any thing but the name, and this is as inappropriate as any that could well have been chosen. Nor can the

fact of the diseased glands, so lately discovered, and about which so much ado has been made, be considered any more distinctive of the disease than the morbid condition of the mucous membrane, so long observed. Indeed, there are good reasons for believing that the latter is the primary, and the former a secondary affection consequent upon it. It is difficult to conceive of such a diseased condition of the mucous membrane, sometimes extending from the lips to the anus, without the production of disease in the follicular glands, which are placed in its folds, or in close connection with it.

We have been told that the inflammation and tumefaction of Peyer's glands are invariably found, and therefore we ought to infer that these are as much characteristics of the disease as are the variolous pustules of small-pox. But it has since been denied, upon good authority, that the existence of disease in these glands is a constant condition ; and if a single case can exist without the local affection, it must be very certain that it cannot be the cause of the fever. Further, it must be considered that it is only in the fatal cases that these conditions can be ascertained ; and if there be exceptional cases at all, these may be supposed to be more numerous in the instances of recovery, or the least violent grades of the disease. No good reason can be given why Peyer's glands are diseased before the appearance of the

fever; nor even afterward during all its continuance, except the sensitiveness of the intestinal canal to the influence of cathartics; and the depressing character of the disease, both conditions pointing directly to the more extended lesion of the mucous membrane. Besides, we should be justified in supposing that Peyer's glands, if they were the seat of the principal local lesion, might become diseased to the extent which has been observed, without there being any considerable morbid condition of the mucous membrane, or of the solitary follicles. But we find that in all cases, both these tissues are involved in disease, and that the mucous membrane is implicated to a far greater extent than would seem to be necessary, were its condition dependent upon the disease first affecting Peyer's glands. While these glands exist only over a comparatively small space, the mucous membrane is diseased throughout its whole extent; and it seems more reasonable to attach the greater importance to the more extended and important lesion. For these and other reasons, which the limits of a lecture will not allow me to discuss, I conclude, that the principal local lesion in enteric fever is not in the elliptical patches or follicles of the ileum, but in the more important and extended tissue, the mucous membrane of the intestinal canal; and that the diseased follicles which sometimes, but not always, appear, and to which such undue importance has been attached,

become so diseased as a consequence of the diseased mucous membrane. The same is probably true also of the mesenteric glands.

In regard to the causes producing this determination of morbid action to the bowels, we know nothing more than we do of the causes of local lesions in other forms of periodic fever. We know only from observation that they are, in all cases of severity, sufficiently prominent in some particular organ of the body to give a name to the disease, distinguishing it from other forms of fever; but we do not know the reason why, any more than we do why the characteristic lesion of small-pox should be in the skin. Enteric fever, however, is supposed to prevail mostly in cities and crowded habitations, and hence it has been attributed to the influence of exhalations, or secretions, from the human body; but the disease is not unfrequently met with in high and dry country localities, where the population is sparse, and where the atmosphere is apparently pure and wholesome. Contagion has been assigned as a cause, but there is no certainty that it ever exists. The doctrine, in regard to this and many other diseases, is supported only by the fact, that the fever has sometimes seemed to spread from a single case; but in general no such spreading takes place, and instances are numerous in which cases occur in isolated positions without such exposure. In small-pox, which is a proper example

of contagious disease, these anomalies do not occur. Whenever two or more cases of this disease are found in the same locality, therefore, it is safer to conclude that they have originated from a common cause, than that one has produced the other without our knowing, as is often the case, how the first had its origin.

In both enteric and gastric fever, it has been observed that persons who have once had them are not liable to suffer from a second attack, at least not severely. As this is true of some contagious diseases, as small-pox and measles, it has been inferred from this similarity that these fevers are also contagious. But the cases are not parallel. Persons who have once suffered from gastric and enteric fevers are not, in fact, wholly exempt from them afterward. They are only placed in the category of those who are subject only to the milder grades of endemic and epidemic fevers. I have had some experience of this in my own person. Many years ago I suffered from a severe attack of yellow or gastric fever, when the disease was prevailing as an epidemic; and in the several epidemics of this disease to which I have since been exposed I have never escaped an attack, and have had all the symptoms of the mild grade of the disease. The truth of this matter is, according to all my observations, that those who have once had violent attacks of periodic fever, with serious lesions of any of the vital organs, rarely ever experience a re-

turn of the same form of the disease of a violent and dangerous character. This is an acclimatizing process, well understood and acknowledged in the South. It is a partial protection only, and not such as is secured by an attack of any one of those contagious diseases which, as a general rule, affect the system but once. No one, not a native of the climate, can consider himself secure from a severe attack of periodic fever, until he has experienced one ; nor does the suffering from one of its distinctive forms afford an immunity from another, although it undoubtedly exercises a modifying influence. Those who have had gastric fever are certainly liable to pneumonic fever, and sometimes to enteric fever ; but the latter form is not common, and does not often become epidemic in this climate. Sad mistakes are made in regard to this matter. Immigrants, after residing in the South several years without suffering from periodic fever, are apt to consider themselves exempt, by reason of their long residence. Under this belief they are willing to incur the risk of any exposure, and they often pay dearly for their ignorance of the subject.

That enteric fever is a periodic disease, with certain local lesions as its consequents, is evidenced by the same facts upon which I have depended to prove to you, that gastric and pneumonic fevers are of the like character. In these and other forms of periodic fever, as I have already more than once remarked to

you, the fever, as a general and constitutional disease, always exists for several days before there are any positive signs of the principal local lesion. These come afterward ; and in no other form of fever is it more certainly the case than in the enteric. All writers on the subject virtually make this acknowledgment ; and yet, strange to say, they insist upon the local disease, not of the mucous tissue, but of Peyer's glands, as being essentially the disease to be treated, and not the constitutional febrile affection. The disease is called typhoid, principally for the reason, I believe, that the strength of the patient fails at a comparatively early period, and the febrile action continues for a long while. Now, that the strength should really fail, because of the suspension of the functions of the mucous membrane, of the mesenteric glands, and even of the glands of Peyer and Brunner, whatever they may be, seems natural enough, as the system is thereby deprived of its accustomed nutrition ; but that the disease is one of actual debility from the commencement, is not more true of this than of other forms of periodic fever. In this climate it is not true of any. Debility ensues from an exhaustion of vital energy by previous excitement, and secondarily, from want of proper nutrition ; and the fever is perpetuated by the irritation of its local lesions.

The diagnosis of enteric fever cannot, of course, be made out in its early stages, for the plain reason that

its characteristic lesion is not formed ; until which, it does not differ from other forms of periodic fever to such extent as to enable us to give a confident diagnosis. We can sometimes judge pretty correctly, however, from the character of the fevers prevailing, or from epidemic influences, so called. We know of no symptom in any case which gives us certain assurance that Peyer's glands are especially diseased, until we come to the autopsy. If the patient survive, we are without proof of the existence of this affection ; for, the use and purpose of these glands not being known, we cannot tell what results follow the suspension or derangement of their proper functions. But we do know something of the effects of the irritation, inflammation, and suspended function of the mucous membrane of the bowels, and also of their influences by sympathy upon other organs of the body.

The treatment proper in the early stages, as may be inferred from the description I have given you of the disease, need not differ from that adopted in other forms of periodic fever. Indeed, it would seem to be quite absurd to recommend any other, while we cannot discriminate between this and other forms. The antiperiodic treatment will, of course, be adopted, and prosecuted with a vigor proportioned somewhat to the expected violence of the disease. Whenever this is properly applied, and at the proper time, there will be no enteric or typhoid fever at all ; for the simple

reason that the fever will be arrested and cured before the characteristic local lesions are formed. Even the irritations and congestions existing in the lungs, brain, stomach, etc., require little attention in the inchoate stage, as they are merely the results of disordered innervation, and under the influence of active antiperiodic treatment, generally temporary. They belong to all the forms of periodic fever, and are not among the distinctive characteristics of any. As nervous affections, they are nevertheless more or less distressing, and may in general be relieved for the time, by the internal administration of chloroform. But should the fever continue, recurring from day to day with constantly increasing violence, then we must expect that the prominent local affection, which is to give the disease character and name, will, under epidemic, or some other mysterious influence, become established ; and then we have an important and always dangerous complication to manage—a local disease which has a constant tendency to increase and perpetuate the fever, through the influence of an active nervous sympathy.

The diseased condition of the mucous membrane having become thus established, the case presents new indications and increased difficulties. The disease differs from gastric and other forms of fever in its slow and persistent progress ; and the greater susceptibility of the bowels to the action of cathartics makes

it necessary to employ this class of remedies with greater caution than in other forms of fever under like circumstances. Castor oil, in combination with turpentine, is, perhaps, among the best ; the former being one of that class which excite the peristaltic action without much local irritation, and the latter being peculiarly adapted, as a local remedy, to the diseased mucous membrane. Indeed, the turpentine is among the most valuable of all the remedies used for the relief of this local affection, and its good effects are sometimes enhanced by the addition of balsam copaiba in small doses. Sugar of lead has been recommended to restrain diarrhea ; also the tannic acid and other astringents ; but there is probably no remedy so valuable as strychnia to meet this indication. The control which this remedy exercises over the movement of the bowels caused by irritation of the mucous membrane, as in this disease and in common diarrhea and cholera, is very decided and reliable. Tartar emetic cannot be freely administered after the local lesion is fully established, because of its irritating influence over the mucous membranes, and the best sedative substitutes are batiling and refrigerant enemata. Frequent sponging the surface with warm whiskey or vinegar, exercises at once a cooling and soothing influence, and it probably produces useful effects upon the mucous membrane of the bowels, by reason of the close sympathy between the bowels and skin.

I am inclined to believe that this is one of the forms of fever in which great injury is frequently done by the too free administration of opium. In the early or irritative stage of the fever it is doubtless useful, although chloroform may be considered a better and safer remedy ; but when the local lesions have become well established, the secretions are always partially suspended ; and this difficulty is apt to be seriously increased by the exhibition of opiates. Calomel now becomes an important remedy, on account of its influence over these glandular obstructions ; but to avoid hypercatharsis, it should be given in very small doses, and not in conjunction with opium. Bloodletting is principally useful in the early stages, but at later periods, topical bleeding may sometimes be resorted to with excellent effects, especially about and below the umbilicus. Sinapisms and poultices, and the two combined, are often very useful upon the abdomen and spine. Dry-cupping the spine is also employed with good effect, as is also the practice of clapping the spinal column. Dry and red tongue, and especially the flaking off the coating in patches, indicate the use of turpentine, as do also the symptoms of tympanitis. The sweet spirit of nitre and Hoffman's anodyne are very composing in their effects, when nervous symptoms prevail in the advanced stages.

Quinia is sometimes used as a tonic in this disease,

but I doubt whether it contains much of the tonic quality of Peruvian bark. It is no doubt useful as an antiperiodic, and should be given as in other forms of periodic fever. In most cases, it is probably essential to the cure, but in the later stages it should not be given in large doses. At all times, the dose may be lessened and the tonic effect increased by the addition of arsenic. The carbonate of ammonia, as an excitant, is mostly to be preferred to alcoholie fluids. Effervescent mixtures are grateful and serviceable, and may be given in small quantities very often. Nourishing food is always necessary, but it must be carefully considered that the power of digestion is much enfeebled, and that every particle of food, of whatever kind, which passes through the bowels undigested, increases the already too great irritation. The free use of mucilaginous drinks cannot always be indulged in with safety on this account, and the indiscriminate and unlimited use of even such bland articles of diet must be condemned. The object of food is to nourish and support the body; and that kind is best which is most easily digested, and which supplies the largest amount of nutriment in a given bulk. I am inclined to believe that the best for general use is fresh milk which has been well boiled as soon as taken from the cow. It is more soothing than gum-water, while it affords an ample supply of easily digested nourishment, and is, withal, a good vehicle

for the exhibition of stimulants. It is important, however, that the milk should be boiled, and it is always better to be boiled while fresh, before the lighter particles have time to rise toward the surface. Milk, used in this way, is both nutritious and medicinal in all intestinal irritations; as is also the gluten of flour, entirely divested of the admixture of starch. I commend these two articles of diet, to your constant consideration.

LECTURE XII.

EXANTHEMATOUS FEVERS.

BEFORE dismissing the subject of fever, it is proper that I should say something of that peculiar class called eruptive fevers. The particular forms which will engage our attention are, small-pox, measles, and scarlatina, as proper representatives of the whole class. To these are sometimes added erysipelas, plague, varicella, roseola, dengue, urticaria, and the vaccine disease. Hooping-cough and mumps have also been considered kindred affections, not specially affecting the skin.

The eruptive fevers begin their course with the usual symptoms of fever arising from whatever cause, and in due time they present their characteristic local lesions with wonderful uniformity upon the surface of the body. There are many points of resemblance in the different forms, just as there are, as we have seen, in the various fevers specifically affecting other and internal organs of the body; and we are told that until a recent period the eruptive fevers were considered only as variations of one and the same disease.

The truth is, however, that they are as easily diagnosed, one from another, as other forms of fever; and even more so, because their characteristic lesions, our principal guide in all fevers, are in these, unlike all others, both visible and tangible. We may conclude, therefore, that they who considered them to be identical, either had not seen the different forms at all, or that they were only very superficial observers in pathology and diagnosis.

These fevers are supposed to be caused by contagion, a mysterious and impalpable influence emanating from the human body while suffering from the disease, and, like the causes of other forms of fever, known only by its effects. All this is, no doubt, true, but it is equally true that eruptive fevers have sometimes appeared, as all must have done originally, without exposure to such contagious emanations. Their spontaneous origin, so called, has not only been proved, but we find the epidemic influence producing them so strong, that their peculiarities are impressed in some degree upon other febrile affections, and even upon healthy subjects who enjoy an exemption from having once had the disease.

As we are not permitted to question the truth of the axiom, like causes produce like effects—in other words, that a particular effect is always due to the operation of the same cause—we must conclude that there are other sources of these causes of contagious

disease than the human body; that whenever these diseases become epidemic, this mysterious essence pervades the atmosphere, and that it exists in varying intensity in different localities, causing more or less of diseased action, such as is peculiar to the prevailing disease, in all subjects who are in a predisposed condition and exposed to the epidemic influence. As to the nature of this cause we know nothing whatever; nor can we have any conception of the differences existing in the various causes of febrile disease, differences which determine the character of the effects produced. As in the case of attraction of gravitation, our knowledge is confined to results.

When any one of these eruptive fevers is prevailing as an epidemic, it is not uncommon to meet with some of its distinctive symptoms, febrile, eruptive, or anginose, without such full development of the disease as will prelude its recurrence at another time, or such as will justify the opinion that the patient, having previously had the disease, has now suffered a second attack. These are effects of epidemic influence, operating upon the system independently of personal contagion, and showing that the morbid effect of a specific cause may be produced in an imperfect degree in subjects who are protected against its entire and legitimate operation. Hence the anomalies observed in this class of fevers. In measles we have the eruption without the catarrhal symptoms,

and *vice versa*; in scarlatina, the eruption without sore-throat, and the reverse; and in small-pox, the umbilicated pustule either with or without fever, and each case without the contagious power belonging to the disease simulated.

The rule of authors is, that the system is not liable to a second attack, but there are many exceptions. In general, as in other forms of fever, the immunity is somewhat in proportion to the violence of the disease, or at least to the fulness of its constitutional development. But this does not always hold true. Confluent small-pox is sometimes succeeded by varioloid. An apparently perfect vaccine disease may be followed by one or more repetitions of it, before the virus ceases to produce its proper effect. Measles and scarlatina are, perhaps, equally apt to reappear, until the system will no longer respond to the influence of the contagion upon it.

This immunity from repeated attacks of contagious disease, even with the exceptions referred to, is a happy provision of nature for the preservation of the human race; but no satisfactory explanation has yet been given of it. The recent attempts to account for it on chemical principles, beside being destitute of proof, seem to my mind irrational, and in conflict with the laws of vitality. It is, in fact, a revival of the humoral pathology, without better reasons in support of it than were given by its ancient advocates.

To suppose the blood, while circulating in the system, to be capable of those chemical changes—fermentations—to which dead animal fluids are subject out of the body, is to admit a principle which leads to the inevitable denial of all vital force, and the consequent disorganization and decay of both fluids and solids in the living body.

While we find animal and even vegetable life sustained in the living stomach, and resisting the strong solvent power of the gastric secretion, as well as a concentration of those chemical agencies so destructive to dead animal matter, we can hardly suppose that the vitality of the circulating blood is of so feeble a nature as to admit of spontaneous decomposition in living bloodvessels; and this at the same time that it is the basis of every form of physiological support, such as nutrition, secretion, innervation, and calorification. The observations of every day convince us that there is a vast difference between the blood in the living body and the blood out of the body, as respects its susceptibility to the action of chemical agencies; and in the absence of all proof to the contrary, it is quite safe to believe, as we have been taught to believe since the overthrow of the humoral pathology, that chemical agency now, as formerly, so much relied on, has no existence in fact. We may still be permitted to cling to the belief, that the phenomena of physiology and pathology find a control-

ling power in the vital principle. We are justified, at any rate, in assuming the negative in the controversy, and in calling upon those who deny the paramount agency of vital power, substituting chemical action in its stead, to verify and substantiate their assumption by proof.

In the origin and progress of these eruptive fevers, we have something that is more definite and reliable than in regard to other forms of fever; for, although we are quite as ignorant of the nature of the cause, and the mode of its operation, we do know its usual source, something of the period of time it requires for producing its proper effects, and the character of those effects. But we cannot account for the fact, that the contagion appears to lie dormant in the system during the period of incubation, or explain why it is that, when it begins to act, it should first produce a depression of vital power, followed by the morbid reäction of fever. And we are equally at a loss to know why, in this case, the characteristic lesion, in due time produced, should be in the form of a peculiar cutaneous affection, in all respects the same as that in the case whence the contagion was derived. These things are just as much hidden from our view as are those of a similar character which appertain to the origin and progress of gastric, enteric, and pneumonic fever; but they corroborate our general views respecting the formation of local lesions as the effect of idiopathic

fever. Were the eruptions in these cases the primary effects of contagious influence, we should probably have fever too ; but this would then be caused by local irritation, and the fever would, of course, be symptomatic.

In exanthematous fevers the febrile action, which constitutes the earliest appreciable stage of the disease, is so closely assimilated to that of other forms of idiopathic fever, that we are not able to distinguish them, one from another, with any degree of certainty. In each there are, indeed, some distinctive peculiarities, but these are more or less common, in some degree, to other forms of febrile disease ; and they cannot be relied on as bases of diagnosis. But whenever either disease becomes epidemic in a particular locality, our suspicions are aroused by every sign of fever ; and then, by close observation of its early peculiarities, we are enabled to warn the friends of the patient of the probable character of the disease. In sporadic and unexpected cases, however, the appearance of the eruption generally affords us the earliest means of diagnosis. It is, therefore, very important to be able to discriminate these eruptions in their early stages.

In their inception, therefore, and in their progress up to the development of their peculiar local lesions, exanthematous fevers bear a close resemblance to other forms of fever, with daily exacerbations and remissions. This periodic movement is generally of

sufficient distinctness to induce physicians to adopt in the beginning the antiperiodic treatment, and especially, should there be great uncertainty about the character of the disease. In many cases there is, indeed, a periodic complication which makes this treatment highly proper and useful ; but it must not be expected that it will arrest the disease. No plan has been discovered by which this can be done. The eruptive stage necessarily follows, and when this appears there is no longer any doubt as to the character of the disease. It is then full time that we should seriously consider the peculiarity of treatment required.

As *small-pox* is the gravest and most fatal of these forms of fever, so is it most important to adopt for its treatment proportionally prompt and active measures. Remedies must be applied upon the general principles of practice, however ; and could we always know, from the beginning, that the case is one of *small-pox*, the mortality attending upon this dreadful disease might be materially lessened. We might, from its very inception, begin to anticipate the grave and fatal symptoms which are so certain to ensue, and to provide, prospectively, for an emergency which must be met and combated.

Authors divide the course of the disease into three stages—fever, pustulation, and decline. The first stage, as already intimated, is to be treated very much as other forms of fever ; but, I repeat, if we are ex-

pecting to encounter so serious a disease as small-pox, we shall do well to make our preliminary treatment proportionally active, even although it may happen that the early symptoms are not of great severity. This treatment must, of course, be antiphlogistic and evacuant, and in degree proportioned somewhat to the vigor of the constitution and the intensity of the prevailing epidemic. In habits decidedly plethoric, free general bloodletting is advisable, and the earlier it is used, the better will be our ability to control the dangerous symptoms of later stages. The same is true in this as in other grave forms of fever; bloodletting in the early stage secures to us great advantages in the subsequent treatment. The inflammatory tendency is, by this means, so far subdued, as to very much lessen the evils arising from violent local lesions; while at the same time the general febrile action is in some degree subdued.

The next consideration is, to relieve the digestive organs of all causes of irritation by the use of emetics and cathartics. In this as in most other diseases, the stomach is always best evacuated by the use of emetics. The early cathartics should be active and efficient. Calomel may be given in scruple doses, and this may be followed by castor oil after a proper interval, so that both may act simultaneously. While all this is being done, we must guard the patient against undue febrile excitement by the use of anti-

monials, cold bathing, fresh air, and sometimes by repeated bloodletting. Care should be taken also that the circulation be properly equalized by the use, if necessary, of sinapisms freely applied to the extremities, and by hot pediluviae. All this, you will observe, is to prepare the patient, as in the treatment of all fevers, for the expected local lesion; for the eruptive stage, or stage of pustulation. This is to be moderated in extent by all possible means, that symptomatic fever may not ensue as an effect of the local irritation, and that we may preserve, as far as possible, the healthy functions of the skin.

Upon its first appearance, the eruption resembles recent flea-bites. It is in florid points, which soon have a hard base sensible to the touch. These, as they enlarge, form vesicles upon the surface, and come to maturity in about eight days in a peculiar pustule, having in most cases a depression or umbilication in the centre. If the eruption should be very thick, many of the pustules coalesce from mere proximity, and in that event the disease is called confluent small-pox, indicating the more dangerous grade of the disease. The mucous tissues become involved more or less in the local affection, producing inflammation in the mouth and throat, and in some cases extending the morbid action to the stomach and bowels. The general fever abates in violence as the eruption appears, and then we have to contend principally with

the nervous irritation and the suspended functions of the skin and mucous membranes. It is during this eruptive stage that a peculiar odor is exhaled from the surface of the body.

The symptoms have now become more complicated, and the treatment more difficult than before ; but if the physician keep constantly in view the general and well-established principles of practice, which in no disease are ever to be lost sight of, he cannot go far wrong. He must consider the danger to the patient of passing from the sthenic to the asthenic condition, and modify his contrastimulant practice accordingly. Tepid sponging, and especially with water slightly acidulated, is often a better means of refrigeration in the later stages than cold bathing ; and care must be taken not to continue the use of cold applications, or the exposure of the patient to cold air, beyond the proper time, merely because these remedies have been so highly recommended in the treatment of small-pox. They are highly valuable, but in this, as in other diseases, only when properly timed.

Care must be taken that the strength of the patient be not prostrated by repeated watery stools, which are best prevented in this, as in other febrile affections, by a proper choice of cathartics. Calomel and aloes are among the safest articles of this class, and in case of watery dejections to an alarming ex

tent, a combination of aloes and myrrh is useful. It is always desirable that this evil should be controlled without the use of opiates, which are only temporary and frequently injurious in their effects. Nothing is more important, however, than the use of cathartics, to the extent of relieving the bowels, daily, of morbid and irritating excretions.

The sinking of the vital powers, so justly to be feared, must be treated, of course, by corresponding stimulation. The carbonate of ammonia is the most important excitant for immediate effect; and the mineral acids and iron the most suitable for permanent support. Sudden and alarming prostration requires the liberal use of sinapisms. The energy exerted by these in reviving nervous power is wonderful; but they must be applied extensively, and often renewed. Secondary fever sometimes becomes troublesome, as the eruption subsides; and to combat this, contrast-irritant measures may have to be resumed. But this seldom happens when the previous stages have been judiciously treated, and especially if bloodletting has been used previously to the appearance of the eruption. Scars on the face may in a measure be prevented by the application of collodion, iodine, nitrate of silver, mercurial ointment, or almost any thing which will shield the pustules from the contact of air.

The fever of *measles* is generally accompanied by more or less of catarrhal symptoms, with suffusion of

the eyes, coryza, sneezing, sore throat, and husky voice. The eruption may be expected about the fourth day, but sometimes it appears later, even so late, it is said, as the tenth day. The eruption first appears in small red points, very like that of small-pox, but without the hard base, although slightly elevated. It is attended by considerable itching and burning, and it frequently extends to the fauces. This also becomes confluent, but in patches of a crescent form, with vacant spaces between. Fever attends the eruption, and sometimes increases, but the patient is generally relieved in some degree of the preceding oppression and inward distress. On the fourth day of the eruption it begins to subside, and is followed by furfuraceous desquamation.

The treatment, as in small-pox, consists in the use of aperients and low diet, together with such external applications as tend to moderate excessive heat and equalize the circulation. But it must be borne in mind that the asthenic condition is more readily induced by depletion in this disease, and especially by active catharsis, and large doses of calomel. Blood-letting is even better borne in most cases than purging; and for reducing redundant heat it is generally better to depend upon evaporation from tepid ablutions with water and vinegar, than upon cold bathing. Soothing mucilage may be applied to the eyelids, and should there be much bronchial irritation,

or pneumonic inflammation, we must resort to the use of cups, leeches, and antimonials with nitrate of potassa and aconite, as in the treatment of pneumonia. An undue depression of vital power must be met by a free use of ammonia and sinapisms. If attended by alarming congestion, chloroform may be freely administered by the mouth.

Unfavorable symptoms are apt to be accompanied by repelled eruption, calling for the use of emetics, sinapisms, and warm bathing. Nearly always, however, the eruption is repelled either by derangement of the digestive organs, or by the sudden exposure to cold. It is, therefore, important to consider that, although refrigeration and catharsis are necessary remedies, they are, when injudiciously managed, abundant sources of mischief. For this reason, these measures are by some almost entirely omitted, and what are called the sequelæ of the disease are apt to appear in consequence. These are more difficult of cure than the original complaint, and they lead, not unfrequently, to fatal results. The principal difficulties are, hepatic torpor, hypertrophy of the liver and spleen, congestion in some of the mucous tissues, pneumonitis and bronchial irritation. These are best relieved by a suitable course of alteratives, having in view the nature and seat of the local affection, followed by tonics. Mercurial and iodine preparations are most relied on. In prescribing mercury in such

cases, I generally give preference to the corrosive sublimate over calomel, as at once more mild and efficient, and as less likely to produce ptyalism. Mereurial salivation in such cases, especially in children, is always injurious, and sometimes proves fatal. You cannot well be over-cautious, therefore, in the administration of calomel, especially if given in conjunction with any of the preparations of opium. Iron and the mineral acids are the best tonics. Quinia is often used as such, and it is, doubtless, a valuable remedy in these cases, but its efficacy depends mainly, I suspect, upon its antiperiodic and contrastimulant qualities.

Scarlet Fever, the remaining exanthem I propose to consider, comes on with many of the same symptoms as the others, but there is generally sore throat, great redness of the mouth and throat, without catarrh or inflammation of the eyelids. The eruption generally begins to appear on the second day, presenting a florid aspect, and, with the exception of the peculiar roughness called goose-flesh, which frequently attends upon it, it is not sensible to the touch. This enables us to distinguish it from measles, the roughness of which may be felt as well as seen. This eruption, like the others, begins with minute red points. These coalesce, and spread into broad patches, presenting a scarlet-colored surface with little interruption. It is preceded and accompanied by dry

skin, and hot evening exacerbations of fever. In many cases the glands about the throat are swollen, and tender to the touch. The different degrees of violence of this disease are indicated by the epithets simple, anginose, and malignant; but these distinctions are of little use in practice.

It often happens that scarlet fever appears in so mild a form as to receive little or no medical treatment; but although the constitutional disturbance is not great, and the anginose symptoms not urgent, it may happen that cerebral congestion or irritation comes slowly on, and we have unexpectedly to contend with coma and delirium, followed by great prostration of vital power. And in the more open and active forms of the disease, when febrile excitement runs high, and requires active depletion and refrigeration, we are sometimes suddenly confronted with asthenic depression, which proves well-nigh uncontrollable. On these accounts, scarlet fever should always be considered and treated as an insidious and dangerous disease, which may at any time assume a serious aspect. The eruption declines from the fifth to the ninth day, and the febrile excitement also, followed at a later period by more or less exfoliation of the cuticle.

The graver forms of this disease require pretty active antiphlogistic treatment, and we must judge of the severity very much by the character of the pre-

vailing epidemic influence; for it is difficult to determine this by the symptoms in the early stage of individual cases. Bloodletting is sometimes important, but, except in robust and plethoric subjects, it is better, in general, to be topical than general. Emetics are much to be relied upon, especially when the anginose symptoms are troublesome, as in other cases of inflammation of the throat. Cathartics must be used in moderation, but so as to rid the bowels, effectually, of all offending ingesta and morbid excretions. Ipecac, calomel, oil, and turpentine, are among the safest and the most efficient of these remedies. Bathing, too, is all-important, but the temperature of the bath must from time to time be carefully considered, substituting warm and even hot bathing for cold, in proportion to the abatement in febrile excitement, and in the tension of the pulse. Not unfrequently the patient requires cold applications to the head and throat, while hot water and sinapisms are used for the extremities. In this, as in the other eruptive fevers, I have found tepid sponging with water and vinegar, persistently applied over the whole surface, to be an effectual means of refrigeration; but in the proper stage for its application the warm or hot bath is among the most valuable of all our remedies in the treatment of scarlet fever.

The partial suspension of the functions of the skin is a prominent difficulty in all eruptive fevers, but

more in this than in any other form, excepting, perhaps, the confluent form of small-pox. It becomes an object, therefore, not only to restore these functions, but to excite the kidneys to increased action, that the patient may receive the benefit of their compensatory power. Various applications to the skin are advised by authors, but I doubt if any are more valuable than water, or a mixture of water and vinegar. No doubt oleaginous substances are useful, but beside being dirty and troublesome they are, either in health or disease, only indifferent substitutes for water. To excite the kidneys to increased secretion, I have found the nitrous diuretics, with abundant dilution, generally best ; but in some conditions the oil of turpentine is more efficient. We must consider, also, that the disease which is doing such injury to the skin extends to the mucous membrane of the mouth and throat, and even the stomach and bowels. On this account, also, the turpentine is a valuable remedy ; and so useful has it proved in some epidemics in England, that some physicians there have advised us to rely on it as our principal remedy, even from the beginning of the disease, and without reference to the extent of febrile excitement. For local application to the throat we may depend upon iodine, nitrate of silver, capsicum, and common salt. When one of these fails to give relief, another may be substituted, and it will rarely be found that one or another

of them will not accomplish all that can be expected from a local remedy. In the asthenic stage ammonia becomes a valuable remedy, but good brandy is sometimes even more effective, especially with children of nervous temperament.

The sequelæ of scarlatina are often more troublesome than those of measles. Dropsy sometimes ensues, with such sthenic symptoms as require depletion, even bloodletting, followed by mercurials, iodine, and various diaphoretic and diuretic remedies. When the sthenic condition has been so far subdued as to favor the reëstablishment of secretion and absorption, the dropsical fluid is, in general, more readily disposed of by cutaneous action, than by urinary secretion. Of course, we must not expect such relief while there exists an excess of excitement, and we must be careful not to commit the mistake, too common in such cases, of using tonics when depletives are required. At the proper time for such influences, the apoeynum cannabinum is one of the most efficient diaphoretic and diuretic remedies, and will sometimes relieve the dropsical affection more readily than any other.

In exanthematous fevers there is more or less of disordered innervation, for the relief of which physicians are prone to prescribe opium in some form, and with good effect as far as concerns nervous excitement; but the remedy is objectionable in most cases, on account of its deleterious influence over the enfee-

bled glandular action. It may generally be dispensed with, except in cases of considerable pulmonary irritation, when it should be used sparingly, and with distrust. And these remarks apply with even greater force to the sequelæ, than to the active stage of the disease. One great difficulty in these sequelæ is, the want of healthy action in considerable portions of the secerment system, and the tendency of opium is to increase it by inducing torpor. Aconite is an excellent substitute; and it is, besides, our best arterial sedative.

Great care should be taken of our patients during the period of desquamation. The healthy functions of the skin are slowly resumed, and the tender surface should be well protected against the influence of sudden changes of temperature. The uncomfortable rigidity of the skin may be ameliorated by the application of proof spirits holding a portion of glycerine in solution; or by a solution of borax in water; and in case of much itching of the skin, a small quantity of sulphate of morphia may be added to either of these solutions. But flannel covering for the body, both day and night, is all-important, as affording at once protection against cold, and facilities for the escape of perspirable matter.

LECTURE XIII.

GENERAL REMARKS.

Now that I have, in the twelve previous lectures, treated of fever in general, and of the various forms and grades which you are most likely to meet with in practice, I propose to make a few additional remarks in reference to the whole subject. This class of diseases will occupy your attention in practice more than all others, and in treating it, in all its various forms, you will have to contend with many anomalies and obscurities, which will often be very perplexing, and sometimes, in spite of all your skill, lead to serious and fatal results. Although fever appears to be a distinct disease, and one which is well defined and described in the books, you will often have occasion to observe, that in this region of country it is liable to be complicated with other diseases, so as to require great discrimination in diagnosis and treatment. In spite of the simplicity of definitions, therefore, unless you are constantly on your guard in respect to peculiarities and complications, you will frequently meet with dis-

appointment, and suffer the evils of censure and chagrin.

Especially is this true of the periodic movement, so common, so long known to the profession, and yet so mysterious and inexplicable. It is true now, as it was centuries ago, that we know nothing of the nature and cause of periodicity; but we have the best reason to know that its influence is exerted over us in all places and at all seasons. In other countries it is said to be different, and in some it is supposed the agency has no existence. European writers lay little stress upon the subject, and I remember to have seen it stated by some medical lecturer in Boston, Massachusetts, that it was a subject of gratulation in that city and country, that periodic disease was wholly unknown there. Subsequently, however, it was announced in a medical journal, that the people of Boston had become alarmed by the report of certain physicians, that several cases of periodic fever had appeared in the neighborhood of that city. These were supposed to have been caused by vast deposits of earth in the work of filling up low, marshy grounds; which is confirmatory of observations in this country in regard to such influences.

In reading the descriptions given of certain diseases in the Northern States and in Europe, and of the successful use of antiperiodic remedies in their treatment, it is not easy to forego the suspicion that periodicity

really does prevail in those countries to a greater extent than is generally believed. Be this as it may, we have to deal with the important fact, that in all the South, periodic diseases are always prevailing; but in some places and seasons they are more active than in others. Impressed as we all are with this great truth, it is but the part of common prudence to exercise constant vigilance for the detection of these influences. Such vigilance often reveals the fact, that nearly every form of disease which we are called upon to treat may be complicated with this difficulty, either as a primary or secondary affection; and more or less seriously according to season, locality, and epidemic influence. Frequently the periodic action is very obscure; but in numerous cases of disease presenting anomalous symptoms we are enabled, by skilful scrutiny, either to trace them to this cause, or to detect, in connection with them, this complication. Indeed, we are not unfrequently forced to the conclusion, that periodic influence lies at the foundation of certain diseased conditions, when the patient entertains the least possible suspicion of the fact. The significance of these remarks will be better understood when I shall have directed your attention to particular affections, which are of obscure paroxysmal character.

Infantile diarrhea, and kindred diseases affecting the digestive organs of children, hold a prominent place in the list of these affections. And there are

few facts in connection with our profession which are of a more melancholy character than the loss of life from this class of diseases. It appears, indeed, to contravene, to some extent, the designs of Providence in peopling the earth, that so large a portion of mortality from disease should occur among those of a tender age. Children born into the world without the least perceptible taint of hereditary disease, and in the possession of every promise of robust and permanent health, become diseased in their digestive organs, in such manner that no medical treatment, however successful in its temporary effects, can be depended upon to eradicate it. They linger on from week to week, and from month to month, under the delusive hope inspired by what seems to be skilful treatment, until, from emaciation, inanition, and sometimes ulceration of the mucous tissues, they sink into untimely graves. Every thing has been done for them, perhaps, which ingenuity, skill, and affection could supply, excepting only the one thing indispensable to recovery—some remedy for periodicity. It is quite natural for the inexperienced to suppose that this evil might be discovered by the physician, the parents or the nurses; but I assure you that in many cases it is no easy matter. The periodic movement is exceedingly obscure; and even after the suspicions of the physician are fully aroused, he may find it impossible to satisfy himself, without observing the effects of antiperiodic remedies.

He must adopt the experimental use of them, or continue to risk the chances of failure. I have reason to believe, that for the want of such experiment, carefully made, the lives of many children are sacrificed, especially in towns and cities. These views receive confirmation from the relief often obtained by removing patients to districts less infested by periodic influences.*

Neuralgia is another disease very frequently complicated with obscure periodicity. Indeed, it is generally, as it appears in the South, a periodic disease, exhibiting, but often in a hidden or masked manner, regular paroxysms, in the form of quotidian, tertian, or double tertian fever, with periods of intense pain marking each exacerbation. The first stage is either one of cold sensations, or exhibiting enough of the usual symptoms of a chill to admonish the patient of the approaching attack. The next is a stage of excitement, with accelerated pulse and severe suffering, the greatest pain in many cases being felt in the course of some branch of the facial nerves. All parts of the system are liable to suffer, and the seat of pain is frequently changed without apparent cause; but the jaws, scalp, some part of the orbit of the eye, and

* When these remarks were written, they had reference only to Southern diseases; but from the observations of a year's practice in New-York City, I am inclined to the opinion, that they are equally applicable here, where nothing is so much wanted as remedies for disease.

even the eye itself, the internal ear, etc., are favorite seats of the local pain, which is frequently attended by swelling. Fatal cases are not common; but the disease is exceedingly painful, persistent, and difficult of cure. When once relieved, we have much reason to fear a relapse, and that the disease may continue to recur for months, and even for years.

In the treatment of this disease quinia is nearly always useful, and it sometimes affords very prompt and permanent relief; but more frequently the disease will return, and return repeatedly, often observing septenary periods, and the salts of quinia seem nearly to lose their effect upon it. In such cases I have found arsenic the best substitute, or arsenic and quinia given in conjunction. For such purpose I prefer the pure arsenous acid, as more efficacious than the arsenite of potassa. But in the treatment of this disease, physicians nearly always resort to the use of narcotic remedies, the most prominent of which is opium, and generally in the form of Dover's powder. I have found stramonium the more efficient remedy in all neuralgic affections, but in none are its effects more striking than in those of the uterus. As an external remedy, the saturated tincture of aconite is generally to be preferred over all others, and especially in uterine affections. But often the chloroform liniment affords much relief, as does also the veratrine ointment.

Rheumatism is another disease—if indeed it be another—which is very commonly obscurely complicated with the periodic movement. This becomes very painful in the joints and limbs, and sometimes in the stomach and bowels. The heart, which European physicians require to be guarded and watched with peculiar care, rarely becomes seriously affected in this country. Perhaps one reason is, that the disease in this country is periodic, and generally treated as such; while in Europe it may more commonly exist as a local affection, giving rise to symptomatic fever, and a fatal issue depend upon metastasis. Fatal cases among us are not very common; but the disease is often painful, persistent, and difficult of cure. When once relieved we have always much reason to fear a relapse, and that it may continue to recur for months and years. When complicated with periodicity, the treatment is the same as in neuralgia. Besides anti-periodics, I have found no remedy to be so uniformly beneficial as stramonium; but a necessity always exists for attention to the condition of the digestive organs, and generally these are best regulated by small doses of ealomel.

Dysentery often perplexes us with its febrile complications, and especially when it appears as an epidemic. In such case it nearly always requires the anti-periodic treatment. Without due attention to this matter, we are likely to suffer disappointment in our

best efforts to effect a cure of the disease. In the period of apyrexia the usual remedies for dysentery may give such relief as to fill us with hopes of a favorable result; but when the febrile paroxysm returns, and especially in the stage of exacerbation, the dysenteric symptoms are certain to recur, and the frequent repetition of this course causes rapid emaciation and loss of strength, until the patient finally succumbs to an insidious and destructive disease, in which a mysterious complication has been overlooked. In some of these cases the dysenteric affection becomes chronic, and the sufferings of the patient are indefinitely prolonged, with a manifest increase of them at septenary periods. Hence the necessity for watching the phenomena attendant upon this disease very closely, and especially when it prevails as an epidemic in malarial districts. Dysentery may justly be ranked among the most obstinate and unmanageable of our diseases, even though it exist without this periodic complication; but whenever this difficulty does occur, it is not easily cured without addressing our remedial measures, in great part, to the relief of the periodic movement.

Ophthalmia, too, although it may seem, upon a superficial examination, to be a disease of a strictly local character, is, in this country, frequently involved in the periodic movement, and to such an extent as to render it incurable, except by resorting to the ap-

propriate constitutional treatment. And I very much doubt whether there is any other local disease which proves more intractable under like circumstances. You will do well, therefore, in all cases of great obstinacy, to examine into this matter, and even to try the effect of the antiperiodic treatment, whenever the mysterious movement proves to be too obscure to be detected by observation. You will find, not unfrequently, that it is only by such experiment that the existence or non-existence of periodicity can be determined. Especially is such experiment advisable in strumous habits, which seem to favor the most obstinate ophthalmic inflammation. It is, perhaps, on account of its peculiar influence over the circulation in the conjunctivæ and the eyelids, that arsenic frequently proves more efficacious in this disease than quinia. The excessive pain and intolerance of light are diminished by the exhibition of morphia; but on account of its injurious influence over the digestive function, I have generally given preference to stramonium and belladonna. The former is better suited to the alleviation of pain, and the latter to the relief of photophobia.

Chorea may justly be considered one of the *opprobria* of our profession, and principally, I believe, because of its undiscovered periodic character. It is one of those diseases which physicians have believed would run its course in spite of all medication. Some-

times the disease recurs annually for several years in succession, and finally disappears only upon the patient's coming to years of maturity, for the disease generally attacks young subjects. In the English hospitals great reliance is placed upon arsenic as a remedy; but I do not know that physicians there attribute its curative power to its antiperiodic effects, or that they acknowledge the existence of the periodic complication. But in this country, where arsenic is also used successfully, it may be considered curative by virtue of this quality, because quinia is our next most efficacious remedy. The disease, however, if closely observed, affords sufficient evidence of its periodic character. I had an interesting case of this disease, which, in one of its annual returns, became complicated with scarlatina of a violent grade, attended not only by an increase in the severity of the chorea, but also by a more distinctly marked periodicity. There was at no time during the progress of the scarlatina any sign of an abatement in the force of one disease to favor the course of the other; and when the scarlatina had run its usual course and subsided, the chorea remained unchanged and unabated. The prevailing opinion, that when two diseases attack the same subject, one must give way to the other to some extent, was not confirmed in this instance.

Chorea has sometimes been supposed to arise from disordered secretions in the digestive organs, which,

in most cases, are found to exist; but it is doubtful whether as cause or effect. Frequently it is the case, that the first noticeable symptom of an approaching attack is, a morbid and somewhat excessive secretion of saliva, attended by loss of appetite and disagreeable taste. The first muscular contractions are also observed in distortions of the mouth, and they are generally coïncident with this unhealthy secretion of saliva. In such cases I have found strychnia to be a valuable remedy. Indeed, in all stages of the disease it is useful, and sometimes the disease subsides under its influence; but in general it is better to conjoin with it the antiperiodic treatment.

The better to enable you to appreciate the importance of exercising constant scrutiny for the mysterious morbid movement called periodicity, I have now invited your attention to the consideration of a few diseases most likely to exist with such complication; but there are others to which time will not permit me to refer in detail. Indeed, such is the extent to which periodic influences prevail in this country, that it is scarcely safe at any season of the year, in any protracted case of disease, to assume the fact of their non-existence. If the patient is not subject to this influence from the beginning, he is very likely to become so during the progress of his disease; and this is true of local as well as general diseases, and even of wounds and injuries. Experience teaches us these

truths ; and if you inquire into the practice of physicians engaged in extensive and successful business, you will find them administering antiperiodic remedies almost habitually in the treatment of diseases which in themselves bear no necessary relation to periodic fever ; and when such cases fall into the hands of strangers to our Southern diseases, their want of success but too plainly shows their inability, for want of experience, to appreciate the considerations which I am now urging upon your attention. Hence the justness of the remark so often made by Southern physicians, that men who have been educated in Northern schools, or engaged in Northern practice, must learn the peculiarities of Southern diseases before they can become successful practitioners in the South. Unfortunately, they seldom come to us in a teachable mood, and only improve upon their own expericence.

Sometimes you will find that physicians, in availing themselves of the benefits of quinia in anomalous cases of disease, assign its efficiency to the tonic power it is supposed to possess. But the effects which lead to this conclusion would just as much justify us in attributing tonic power to the preparations of mercury. In both cases it consists, in my opinion, in the removal of disease, and enabling the patient to experience the beneficial influences of returning health. The Peruvian bark doubtless does excrcise tonic pow-

er, by virtue of its astringent and bitter tonic qualities ; but we have no reason to believe that these exist, to much extent, in its proximate principle, quinia, or in any of its salts.

You will meet with many persons, especially in the so-called malarial districts, who have been treated with quinia in large doses, until, as they will tell you, it has lost its remedial effect upon them, while it causes distressing disturbance of the functions of the brain and nervous system. These representations are not to be disregarded, for it is doubtless true of quinia that when persons, especially those of a nervous temperament, have been frequently subjected to its full constitutional action, they ever afterward suffer from its painful or toxical, without receiving the proper benefits from its remedial, effects. There is an idiosyncrasy too with some, which subjects them to the evil influences of quinia from the beginning. Sometimes this appears in its action upon the nervous system alone, and sometimes upon certain secretions, especially of the kidneys. For all such you must find some substitute for the quinia ; and, according to my experience, the best of these is arsenic, which is an antiperiodic remedy scarcely less active and efficient than quinia, and one which seems to be peculiarly well suited to such cases.

Arsenic must be administered, however, very cautiously, and its long continuance at any one time

should generally be avoided, especially if given in full doses, and frequently repeated ; and for the reason not only of its toxical effects, but because persons experiencing its remarkable tonic power are sometimes tempted to its habitual use. Its effects are to enhance the vigor and activity of the muscular system, and to invigorate the respiratory and vocal organs ; increasing, indeed, to a remarkable degree, the powers of bodily action and endurance, and guarding the system against fatigue. Of course, the habitual use of arsenic must cause proportionate exhaustion, and tend to wear away, prematurely, the physical energies. It has been contended that the continued use of arsenic may produce dropsical affections, evidenced in the first instance by an edematous appearance of the eyelids and face. This appearance is not uncommon, but I have never witnessed any further sign of dropsical affection from its use. It is supposed to be a sign of the full constitutional effect of the remedy ; but an earlier and more reliable indication of this is the appearance of slight inflammation of the conjunctivæ, with more or less itching or pain, and intolerance of light, as in other cases of incipient ophthalmia.

One other remark in reference to the action of quinia and arsenic, whether given separately or conjointly. You will often have occasion to observe, that when your patient is laboring under the influence of

periodicity, he will bear them better, and in larger doses, than when he is not. A moderate dose of either or both will frequently cause a disagreeable sensation in the head, with more or less headache, in the healthy subject; when the same person laboring under the influence of periodic disease would experience only comfort and relief from the same doses. In any experiments which you may feel called upon to make, with a view to determine the existence or non-existence of periodicity in any case, it will be well to bear in mind this important fact. Much of the prejudice against these remedies, growing out of the disagreeable effects they sometimes produce, arises from the fact of their being used when they are not needed—when there is no periodicity existing.

And now I wish to call your attention to the use of chloroform as an internal remedy, in the class of diseases which we have been considering. We hear much of its value as an anæsthetic when inhaled into the lungs, but physicians do not seem to be fully aware of its power over disordered innervation when taken into the stomach. The occasions most requiring its use in this way are for the relief of congestions in the cold stage of fever, which in adults cause great distress in the thoracic and abdominal viscera, and sometimes in the brain; and in children frequently produce convulsions. In congestions of the brain from sunstroke, concussion, parturition, etc., and in

spasmodic asthma and colic, chloroform is eminently useful. In cases of urgency, I suppose a fluidrachm may be considered a medium dose, and it may be repeated as occasion requires. In no other diseased condition have I found this remedy to be so valuable as in infantile convulsions. In these, and in some cases of adult disease, I have administered the remedy by enema as well as by the mouth. It is an important fact for you to know, too, that when your patient is in a state of insensibility, or convulsed, so that other remedies cannot be given by the mouth, chloroform poured between the lips, and suffered to trickle through the teeth, will, when it reaches the organs of deglutition, excite them to action, and be carried into the stomach, almost while any vitality remains.*

* CASES IN ILLUSTRATION.—1. In 1852, a stout, plethoric man was found lying in the street in a state of insensibility, supposed to be from sun-stroke. The bystanders declared him unable to swallow water. I poured into his mouth from a vial, a drachm or more of pure chloroform, which he soon swallowed, and in less than half an hour he was quite relieved. 2. The same year a child, aged three years, had been for more than one hour in a general convulsion. A small tea-spoonful pure chloroform poured into the clenched jaws percolated through the teeth, and found its way to the stomach. In a few minutes the spasms ceased, and after sleeping quietly for half an hour, the child awoke, and called for food. 3. In 1854, Mr. —— was seized with a severe chill. I found him covered with blankets, and surrounded by hot bricks, drinking hot brandy toddy. A full tea-spoonful pure chloroform was immediately given, and all the hot applications removed.

Change of habitation and locality is no mean remedy for periodic diseases, frequently enabling us to effect a cure more promptly and effectually. Intermittents of a persistent and obstinate character frequently subside upon removal of the patient from the city to the country, and the reverse; and especially upon emigrating to a different country and climate. Children suffering from intermittent diarrhea often find relief from being moved from one neighborhood to another in the country, or even from one street to

The chill at once subsided, and only slight febrile reaction followed. 4. In 1863, a child of C. C. C., aged about two years, was taken with a convolution, which continued in spite of remedies nearly two hours. I found it inhaling chloroform without effect. A full tea-spoonful was at once introduced into the stomach, and a like quantity soon after given by enema. In half an hour the child was in a sound sleep, and recovered without difficulty. 5. In March, 1865, a gentleman in New-York City had been suffering with a severe chill for more than one hour. I gave him a tea-spoonful chloroform in sweetened water, and partial relief only being obtained, the dose was in half an hour repeated. The chill soon subsided, and only moderate reaction followed. 6. On the seventeenth April, 1865, a child, five and a half years old, was seized with a convolution at the corner of Sixth Avenue and Twenty-seventh street. She was taken thence to Leroy street, and after nearly two hours of uninterrupted convolution took a full tea-spoonful pure chloroform. In half an hour the convolution had ceased, and she was in a quiet sleep, and recovered.

On the thirty-fifth day afterward, at the same hour, this child had another attack of the same kind. The convulsions had continued exactly two hours, when a tea-spoonful of chloroform was given; this was followed in twelve minutes by half as much more, giving entire relief.

another in the city. When yellow fever prevails as an epidemic, I have never known a patient to be moved into other quarters before the fatal symptoms appear, without producing a good effect; and sometimes when conveyed beyond the infected district, a decided intermission of the disease is produced, affording great advantages in the treatment. Perhaps the good influences may be partly due to the gentle motion and jarring of the mode of conveyance; but whatever may be the cause, the beneficial effects are remarkable, and I have thought it possible that the time might come when physicians will employ the rail-car as an important remedial agency. It is to be considered, too, that certain forms of disease are often mysteriously epidemic in a single habitation or family, insomuch that every person in the household suffers an attack, and relapses continue among them during a whole season, unless removed. In no other disease, perhaps, is this more strikingly and uniformly true than in diphtheria, which rarely ever attacks one child in a family without extending to all the rest, and sometimes even to the adult members. And you will have occasion to observe the very common fact, that diseases epidemic among negro slaves are frequently confined to a single plantation, and even to a single house. The importance of change of locality in all cases of limited epidemics can scarcely be over-estimated.

In conclusion, I may caution you, as I have often before done in my lectures, against excessive, inconsistent, and complicate medication. It is a common fault of young physicians to indulge in over-dosing, and in the use of a multiplicity of remedies. This arises in a measure from uncertainty in diagnosis, and undue confidence in certain medicines. The first object in every case of disease is to ascertain what are the true indications ; and the second, to answer these with the simplest and most efficient means. Not to observe these rules is to prescribe very much at random. If you are quite certain in your diagnosis, the proper remedy suggests itself ; and in using it care must be taken to give it in proper quantity, and not to impair its efficacy by inconsistent and incompatible combinations. It will readily occur to you when you find the secretions, especially of the digestive organs, checked or suspended by fever, and while constitutional excitement has been suitably subdued, that calomel is, in general, strongly indicated ; the effect of which is to restore these secretions. But if you combine opium with the calomel, the tendency of which is to suspend these secretions, you may expect disappointment in the amount of your success. In such cases the two remedies do not agree well together ; and in the graver forms of fever the use of opiates in such condition of the secerning system, will not unfrequently cause fatal results. I mention this

by way of illustration. But there are other inconsistencies too commonly practised, such as combining specific and topical emetic medicines, which operate at entirely different intervals of time ; also quick and slow-moving cathartics. Certain medicines, however, have their valuable adjuncts, suited to particular cases and conditions ; but in a large majority of diseases which we are called upon to treat, if we know the proper remedy to meet existing indications, we shall do better to give it by itself. It is a convenience in many cases, therefore, to hold each remedy separate, rather than compound them in complicated formulas. Even the vehicle is carefully to be considered, because nothing is more certain than that no article of diet, however bland, can pass through the bowels of a sick person undigested, without injurious effects. Even mucilaginous drinks cannot be thus trusted.

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